96th year

JANUARY 1955
Vol. 182—No. 1

AMERICAN Gas Journal

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NOW... Top-Selling Gas Ranges Feature

Robertshaw®

POTWATCHER*.....TEMP 'n TIME*

AUTOMATIC GAS RANGE CONTROLS

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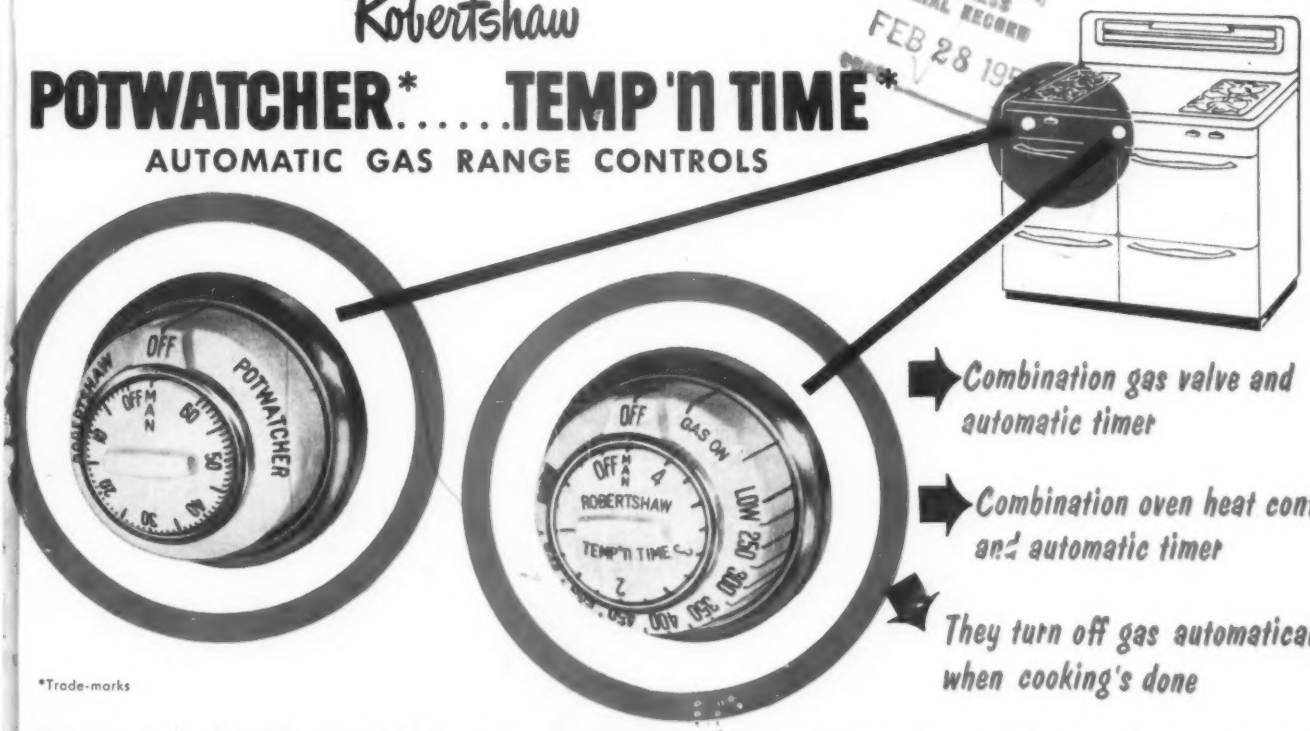

Combination gas valve and automatic timer

Combination oven heat control and automatic timer

They turn off gas automatically when cooking's done

*Trade-marks

NOW . . . *only* Gas ranges can offer this finest automatic cooking service. Now . . . with *Robertshaw®* POTWATCHER and TEMP 'n TIME Controls . . . you can cash in with the most exciting Gas Range selling features in years!

Widely advertised, publicized, promoted.

WELCOME the Gas Range Salesmen selling models equipped with these dependable timers. They will show you how you can get bigger and better Gas Range sales.

ASK for information about FREE point-of-sale display material on POTWATCHER and on TEMP n' TIME to stage a *real* Automatic Gas Range Sales Demonstration!

Mr. Controls

Robertshaw-Fulton CONTROLS COMPANY

Robertshaw Thermostat Division • Youngwood, Pa.

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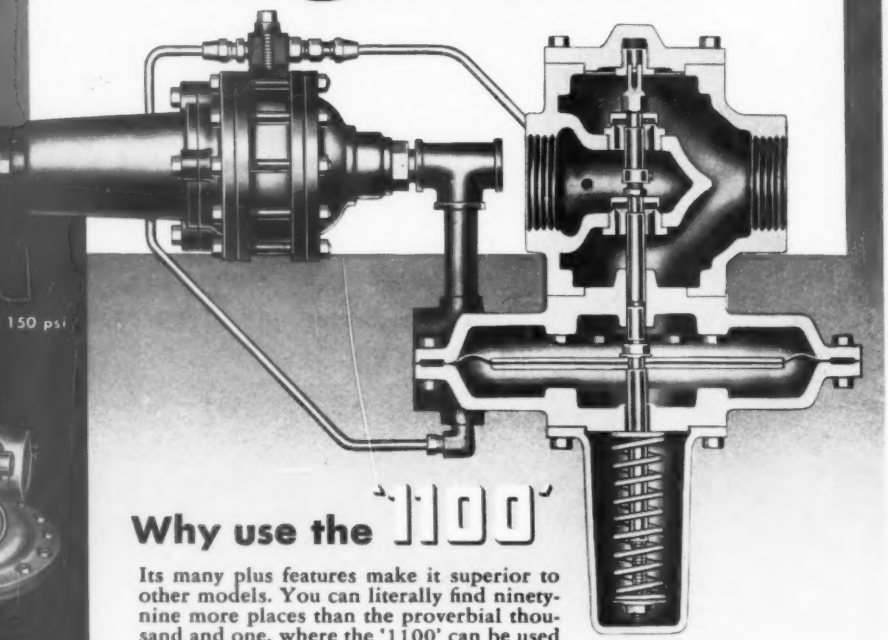
Chaplin-Fulton

why? '1100' regulator



Why use the '1100'

Its many plus features make it superior to other models. You can literally find ninety-nine more places than the proverbial thousand and one, where the '1100' can be used to advantage.

One basic assembly-2"-screwed or flanged.

- **WIDER APPLICATION**—inches water to 150 psi controlled pressure—means less different types to stock and service.
- **GREATER CAPACITY**—balanced valve construction passes 114,000 CFH at 100 psi to ounces—replaces larger costlier regulators to reduce cost of whole installation.
- **PROVEN PERFORMANCE**—straight line control from minimum to maximum flow. Stable operation on quick changing loads, or with on-and-off controls. Fast low lock-up on zero flow.
- **SIMPLER CONSTRUCTION**—no intricate parts or delicate adjustments. All wearing parts easily replaced. Regulator or pilot can be serviced without disturbing the other.
- **EASIER INSTALLATION**—compact design requires little space for installation in any position. Just place in line and make one connection from regulator to outlet line.

ACCURATE CF MFG. CO DEPENDABLE

Chaplin-Fulton
MANUFACTURING COMPANY
Pittsburgh 25, Pennsylvania

Bulletin 1100 with complete information sent on request.

54-1100

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American® Meter has paced the Industry

Since the formation of the American Meter Company in 1836, each major advance in the metering of Gas has been pioneered by American. Advances in design, in construction features... advances to insure greater accuracy, dependability and longer meter life... all have begun with American.
Pacing the industry has been our pride...

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EST 1836
MEASUREMENT ENGINEERS ®

AMERICAN®
METER COMPANY
INCORPORATED ESTABLISHED 1836

...and now.....

A TOTALLY NEW CONCEPT IN THE ECONOMICS OF GAS MEASUREMENT

The American® Welded Steelcase Meter

Your American Meter representative will gladly present the story of the W-60... latest in a series of products destined to revolutionize the entire concept of the economics of metering

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...watch for future developments

AMERICAN
Gas Journal

VOLUME 182 — 96TH YEAR : : JANUARY 1955 — NUMBER 1

This month...

PUBLIC RELATIONS has been the subject of 3 interviews we have reproduced during recent months after talking with the head man in each of 3 gas industry associations. Now, we are presenting the viewpoints of gas utility executives. The first of these interviews, with Emery D. Sherwin, president, San Diego Gas & Electric Co., reflects an intense conviction that public relations should be practiced by all hands in a utility, all day and every day. ***Page 21.***

JANE . . . of Columbus, a title in the adjoining column, might well have an intriguing note. But, Jane's work and her accomplishment will take some of the starch out of the concept that the gas industry is strictly-for-men-only. *Page 15.*

IN LINE with our contention that gas can be sold only as long as there are adequate sales of gas-burning appliances and equipment, we have rounded up the range situation at the Chicago market. ***Page 45.***

ALSO, an in-action display of modern gas appliances has been developed in Illinois as a cooperative promotion by appliance manufacturers, a gas utility and an LP gas distributor, together with American Institute of Architects and National Association of Home Builders. Research Village—a well-rounded job of cooperation and merchandising. *Page 47.*

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Charles R. Bellamy · Technical Editor

Arthur Rohman · Western Editor **John F. Falvey · Financial Editor**

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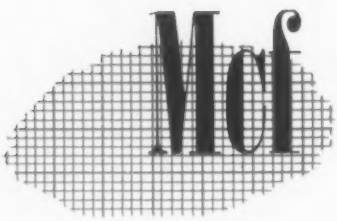

ANALYSTS—most of them, anyway—are looking toward a slow but dependable uptrend in business for this year. Consumers' expenditures during 1954 were regarded as an extremely important stabilizing factor. There are strong indications present that the pattern last year will continue and there is some anticipation of expansion of consumer confidence and willingness to buy.

FORMOSA CRISIS? Certainly, no guesses and no comments on this page.

STEEL INGOT production in 1955 is expected to be 5-to-10% greater than the 88-million tons in 1954.

PASSENGER CARS up, but not by more than 5% over 1954—that is another well-informed view.

PERSONAL INCOME, the real basis for consumer confidence, is expected to top $291-billion. That would be an average increase over the $286-billion last year. Farm income is soft, in some economists' opinions.

CONSTRUCTION, the gas industry's big white hope for expansion, is almost unanimously expected to continue the strong upswing that has been in effect for more than a year.

ENGINEERING GRADUATES are not going to be as plentiful as they have been, if some well-educated forecasters prove to be correct. All industry will feel the pinch. More encouragement and inducement needed. Cheers for companies, such as Coleman Co., that do something about it. *See page 49.*

PIPELINE SAFETY is in front of Congress again. The Heselton Bill (H.R. 433) has been reintroduced; FPC is likely to continue favoring its enactment.

FEDERAL POWER COMMISSION crystal-ball is still cloudy in the search for a workable procedure in regulating producers' prices of natural gas. Order 174B *(see page 29)* doesn't clear things in that direction.

UTILITIES set up some hard facts, at FPC hearing, when they pointed out, among other items, that natural gas costs to individual companies had increased as much as 72%. And, they also pointed out that most of that was in the producers' price increases.

COMPLICATIONS are everywhere: among producers, pipeliners, distributors and FPC. It's trite, but probably will prove true: the complications will get worse before any improvements in the overall industry situation will be noticeable.

FORCES favoring and opposing Federal regulation of producers are so powerful, each in its own right, that battle now shaping is bound to have magnitude that will preclude the possibility of decisive Congressional action in this session.

CHAIRMAN KUYKENDALL, FPC, commented in course of recent address that several pipeline companies are *not* taking part in hearings on Federal regulation of gas production so that they will not offend *either* producers or distributors.

"THIS," he said, "represents a lack of cooperation between the three segments of the natural gas industry."

UTILITIES in New England are looking at competitive price situation that is so tight that even interruptible industrial gas sales are being switched to oil.

DOUBTFUL BLESSING, that is simplified and politely modified view of natural gas in the minds of some utility executives.

MANUFACTURE of gas—again—is getting serious technological and economic study. Some utilities figure that after 100-or-more years in the gas business, they can't risk the possibility of being priced-up-and-out.

ADS in newspapers, directed toward obtaining a public opinion favorable toward removal of Federal regulation of gas production, by Natural Gas and Oil Resources Committee, caused many questions as to the signators. "The *oil* industry is talking *gas;* are they telling the story as oil men or as gas men?" We thought we might get the answer, but haven't been able to do that yet.

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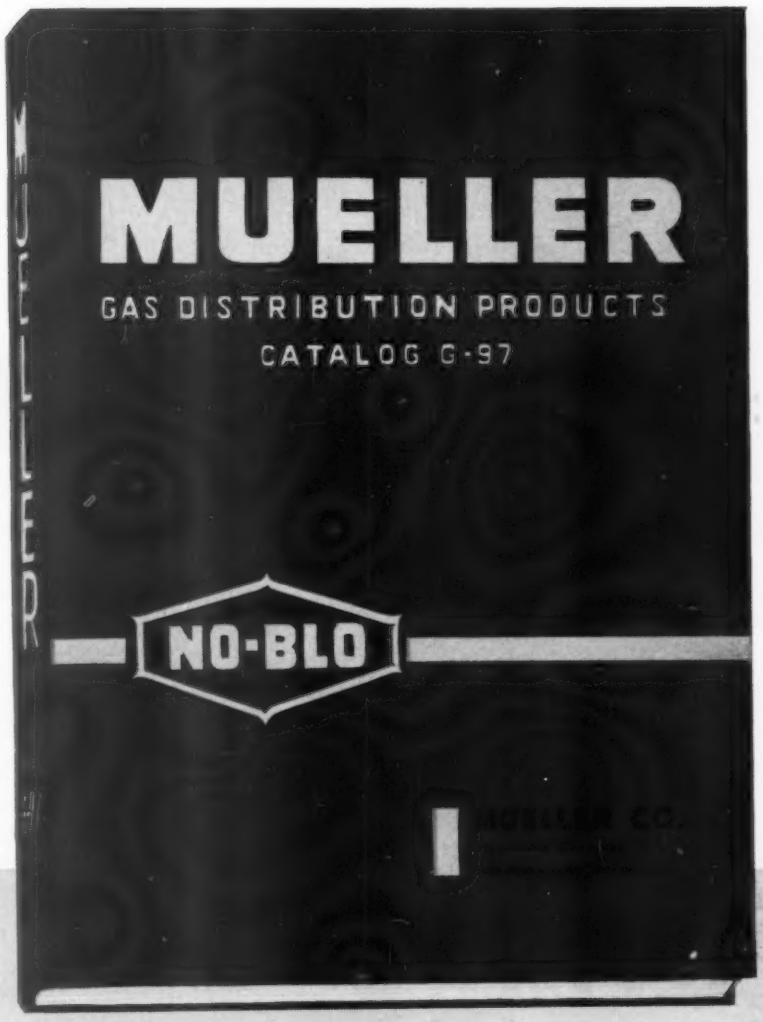

Announcing

THE NEW MUELLER GAS DISTRIBUTION PRODUCTS CATALOG G-97

You may expect your copy of the all-new Mueller Gas Distribution Products Catalog to arrive sometime late in January. If you would like additional copies, please drop us a note – Mueller Co., Decatur, Illinois.

MUELLER CO.

Dependable Since 1857

MAIN OFFICE & FACTORY DECATUR, ILLINOIS

AMERICAN GAS JOURNAL, January, 1955. Vol. 182, No. 1. Published monthly (except November, then semi-monthly), by American Gas Journal Inc., at 73 Main Street, Brattleboro, Vt. Entered as second class matter January 24, 1950, at the post office at Brattleboro, Vt. under Act of March 3, 1879. Executive and editorial offices at 205 East 42nd St., New York 17, New York. Subscription prices, U.S. $3 per year; Canada $4; Foreign $10. Single copies 50 cents, except November issue, which is not sold separately. Printed in U.S.A.

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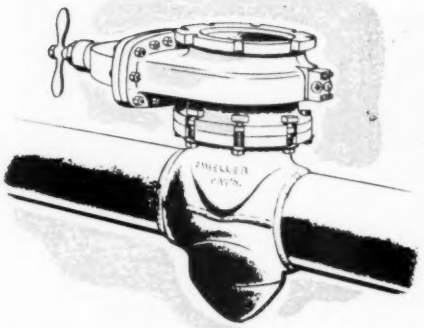
NO-BLO Method

ISOLATES PIPE SECTIONS SAFELY...



STEP 1. **WELD!** TACK WELD HALVES OF FITTING TOGETHER, POSITION AND WELD TO PIPE. COMPLETION PLUG SHOULD REMAIN IN FITTING — **HAND-TIGHT** — DURING WELDING TO PREVENT WARPING. ALLOW FITTING TO COOL WITHOUT CHILLING. TEST. BOLT SPECIAL GATE VALVE TO FLANGE OF FITTING.

with the H-17340

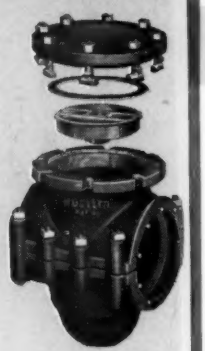
STEP 3. **STOP-OFF!** ATTACH STEEL WEDGE STOPPER TO OPERATING SHAFT AND BOLT H-17340 STOPPING MACHINE TO VALVE. CONNECT BY PASS LINES. LOWER STOPPERS INTO FITTINGS AND EXPAND. ISOLATED SECTION MAY NOW BE REPLACED OR REPAIRED. (TO REMOVE EQUIPMENT, REVERSE PROCEDURE)

Steel Wedge Stoppers

Double-acting expanding mechanism inside of split steel cylinder covered with a replaceable sheet of tough, durable neoprene. Used with the H-17340 Stopping Machine for high, medium or low pressure stop-offs. Sizes 6" and 8".

Welding Line Stopper Fitting

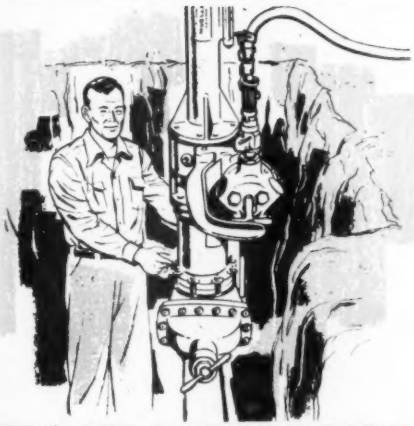
Heavy steel forgings especially designed for steel pipe. Used to stop-off lines to permit replacement, repair, or relocation of pipe sections. Sizes 6" and 8" with series 15, 30, 40, 60 and 90 flanges. Other sizes available.



Mechanical Joint Line Stopper Fitting

Special analysis cast iron fitting designed for cast iron pipe or steel pipe when welding is not desired. Sizes 6" and 8" with series 15, 30, 40, 60 and 90 flanges. Other sizes available.

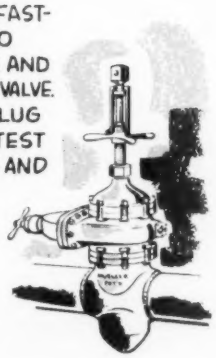
This is another of a series showing the broad application of Mueller No-Blo Fittings and Machines used for their installation.



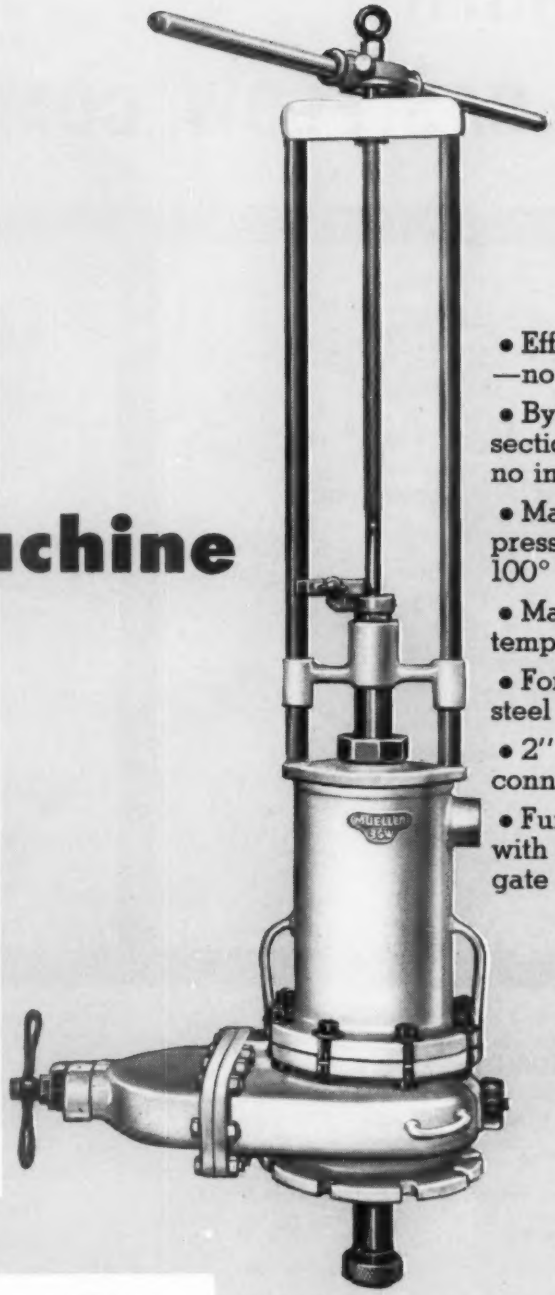
STEP 2. **CUT!** MAKE CUT ENTIRELY THROUGH LINE WITH **MUELLER** "CC-36" OR "C1-36" DRILLING MACHINE. WHEN FEED INDICATOR SHOWS CUT COMPLETED, RETRACT CUTTER – WHICH RETAINS COUPONS, CLOSE VALVE AND REMOVE MACHINE.

Stopping Machine

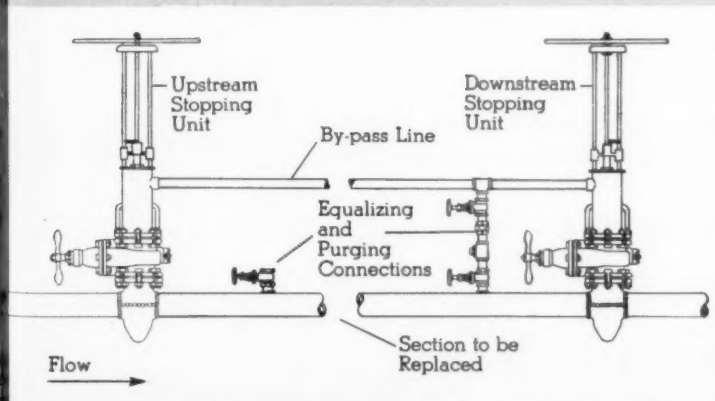
STEP 4. **COMPLETE!** FASTEN COMPLETION PLUG TO COMPLETION MACHINE AND BOLT MACHINE TO GATE VALVE. OPEN VALVE, SCREW PLUG FIRMLY INTO FITTING, TEST AND REMOVE MACHINE AND GATE VALVE.



TIGHTEN PLUG SOLIDLY WITH WRENCH AND BOLT COMPLETION CAP IN PLACE.



- Effectively stops-off main —no blowing of gas.
- By-passes gas around section to be replaced— no interruption of service.
- Maximum working pressure of 230 p.s.i. at 100° F
- Maximum working temperature of 250° F
- For use on 6" and 8" steel or cast iron pipe
- 2" Built-in I. P. by-pass connection
- Furnished complete with special cast-steel gate valve



et-up used for replacing, repairing, or relocating a section of pipe without interruption of service.

For additional information on Line Stopper Unit No. 3 and other No-Blo Fittings, consult your Mueller Representative, Catalog G-97 or write direct.

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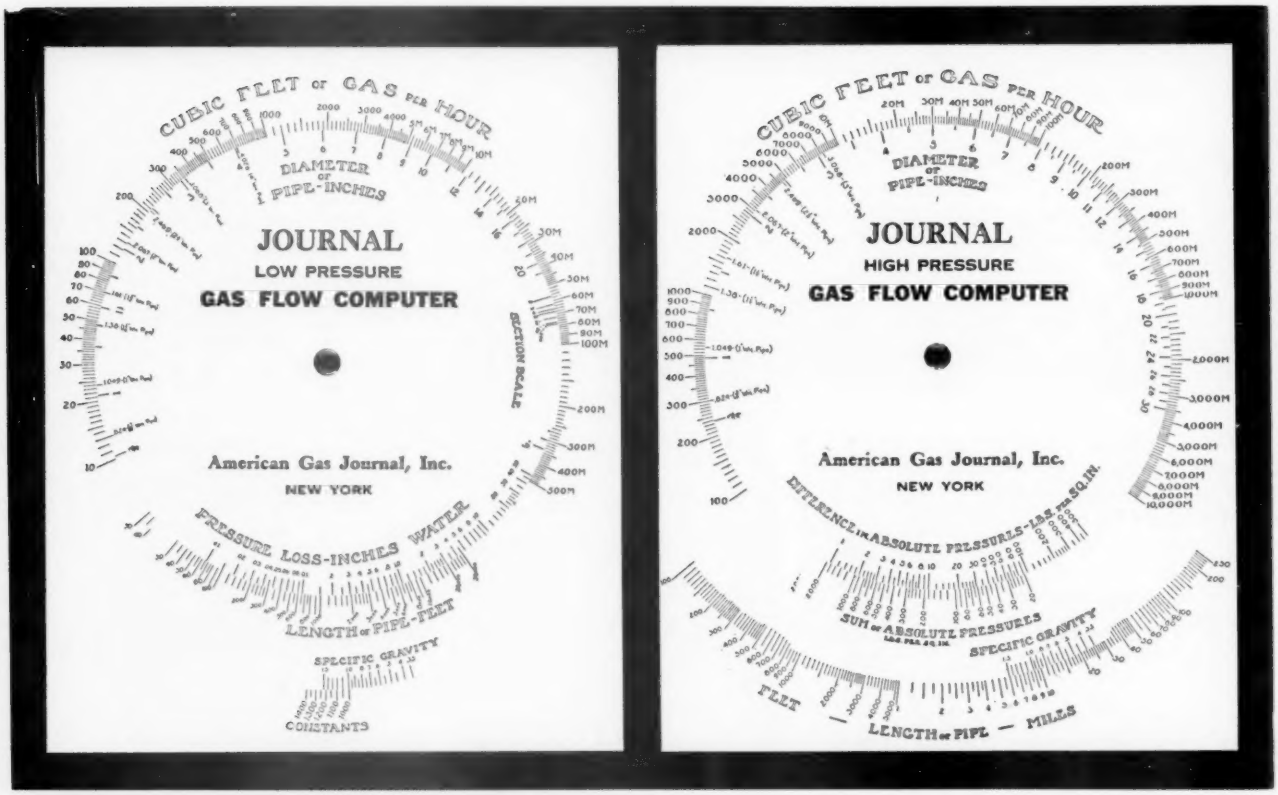
GAS FLOW COMPUTERS



FOR LOW PRESSURES

Cubic feet of gas per hour	10 to 500M
Pipe diameters	¾" to 48"
Pressure loss (inches)	.01 to 10
Specific gravities	1.5 to .35
Constants	1400 to 1000
Pipe length (feet)	30 to 30,000

FOR HIGH PRESSURES

Cubic feet of gas per hour	100 to 10MM
Pipe diameters	¾" to 30"
Difference in absolute pressure to	500 psi.
Sum of absolute pressures	20 to 2,000 psi.
Specific gravities	1.5 to .35
Pipe length (feet)	100 to 5,000
Pipe length (miles)	1 to 250

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AMERICAN Gas Journal

205 EAST 42 STREET—NEW YORK 17, NEW YORK

NEW! First and only water heater

...that cannot produce rust-discolored hot water, yet sells at prices comparable to lined-steel-tank types!

The sensational new RUUD ALCOA® ALLOY Automatic Gas Water Heater

Here's the kind of gas water heater you know you can promote profitably. A *solid aluminum alloy tank* that can't produce red-rust . . . in a quality unit priced competitively with ordinary lined-steel-tank water heaters.

Top quality—backed by the combined skills and resources of two top-rated names in their fields. RUUD . . . America's oldest manufacturer of quality water heaters, and ALCOA . . . world's largest producer of aluminum.

The new Ruud Alcoa Alloy is a fast-recovery unit that delivers more hot water faster, cleaner and longer than any other water heater, at or anywhere near its price. It safely stores water at 180° sanitizing temperature.

An optional convenience! Ruud duo-temp feature delivers two hot water temperatures from the same tank at the same time! 180° water to maintain a temperature of 160° in the automatic washer; 125° tap-safe water for bath, shower and lavatory.

® Aluminum Co. of America

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Mail This Coupon Today!

The revenue-building Ruud Alcoa Alloy is Laundry-Rated to meet the critical hot water quantity and temperature demands of automatic clothes washers. Send for complete details today.

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☐ Please have a Ruud man call on me.
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Rockwell Sponsored Contests To Stimulate Thinking About A Planned Meter Retirement Program

This Distinguished Board of Gas Industry Authorities Judged All Entries

These five judges were selected for their reputation and standing in the industry and their intimate first hand knowledge of metering problems.

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The East Ohio Gas Co.
Cleveland, Ohio

H. L. MASSER
Executive Vice President
So. California Gas Co.
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D. A. HULCY,
President
Lone Star Gas Co.
Dallas, Texas

F. A. LYDECKER
Vice President,
Gas Operations
Public Service
Electric & Gas Co.
Newark, N. J.

THE COMPLETE LIST OF PRIZE WINNERS

ESSAY CONTEST

1ST PRIZE, Complete set of Delta Industrial Type Power Tools
G. K. BACHMANN
Public Service Elec. & Gas Co.

2ND PRIZE, Complete set of Delta Homecraft Power Tools
DOUGLAS L. McLEOD
Coast Counties Gas & Electric

HONOR AWARDS, (Four given) Complete DeltaShop and Accessories
DONALD J. HEIM
Washington Gas Light Co.

J. M. PICKFORD
Northern Indiana Public Service Co.

ANTONE G. PRASIL
Wisconsin Public Service Corp.

C. V. MOREY
Consolidated Edison Co.

HONORABLE MENTION AWARDS (8 given) Delta Homecraft 8" Tilting Table Circular Saw
J. GORDON CREE
Borough of Chambersburg, Pa.

S. J. FISHER
Mountain Fuel Supply Company

EUGENE J. KUHNS
The United Gas Improvement Co.

C. ALKEMA, JR.
Michigan Consolidated Gas Company

ADOLPH W. RAUTH
Consumers Power Co.

W. F. BENNETT
Atlanta Gas Light Co.

JAMES H. J. HUGHES, JR.
Brooklyn Union Gas Co.

S. H. GLASSBURN
Northern Indiana Public Service Co.

JINGLE CONTEST

1ST PRIZE, Complete DeltaShop and Accessories
H. H. SEXTON
Houston Natural Gas Corp.

2ND PRIZE, Delta Homecraft Saw and Jointer Combination
D. U. WHEATON
Southern California Gas Co.

3RD PRIZE, Delta Homecraft Drill Press
JACK R. DAVIS
Southern California Gas Co.

HONOR AWARDS (10 given) Delta Homecraft 16" Scroll Saw
HENRY HARTMANN
Brooklyn Union Gas Co.

CHARLES H. FOWX
Central Hudson Gas & Elec. Corp.

HOWARD L. JOHNSON
Pacific Gas & Electric Co.

VICTOR B. GALLANT II
Southern Counties Gas Co.

D. M. STEEN
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BILL G. LEWIS
Coast Counties Gas & Elec. Co.

WALTER M. TREVOR
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STUART TALBOT
Peoples Gas Light & Coke Co.

ED READ
Pacific Gas & Electric Co.

ROSCOE R. WHITE
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These Contests Conducted As A Gas Industry Service By

ROCKWELL MANUFACTURING COMPANY
PITTSBURGH 8, PA.

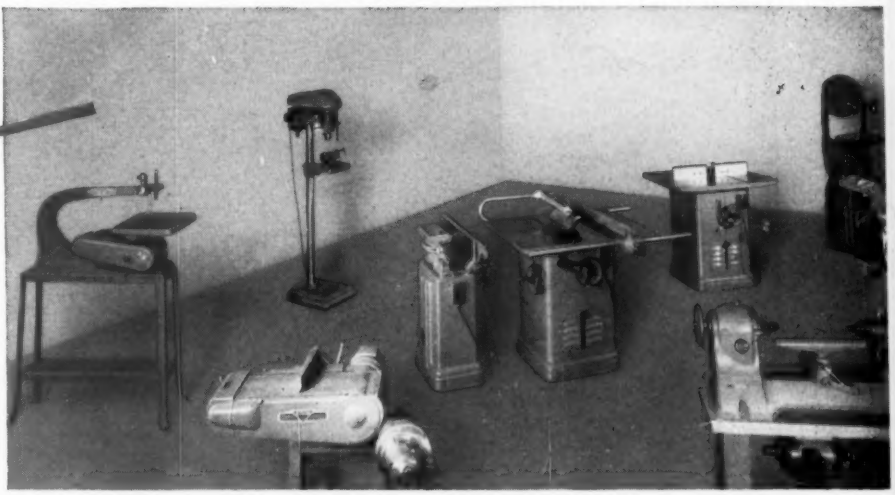
DELTA Power Tools in the 2 Big Rockwell Meter Contests

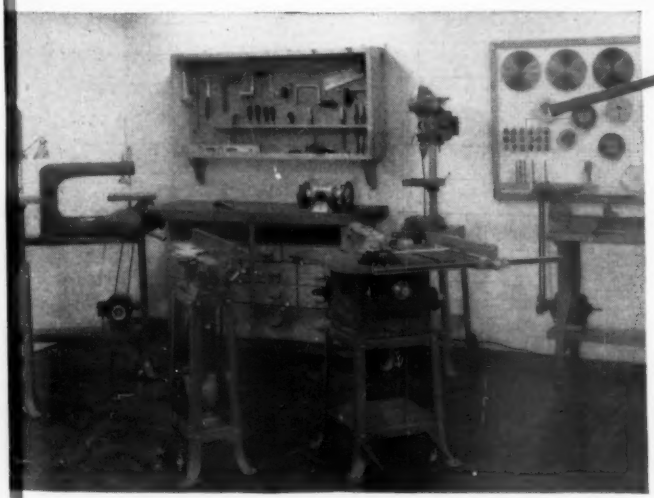
Winner of The GRAND PRIZE 1st Award in Essay Contest

A complete set of the finest industrial quality Delta Power Tools.

AWARDED TO

G. K. BACHMANN
Public Service Electric & Gas Co.





Winner of The 2nd MAJOR PRIZE in Essay Contest

A complete shop of Delta Homecraft Tools.

AWARDED TO

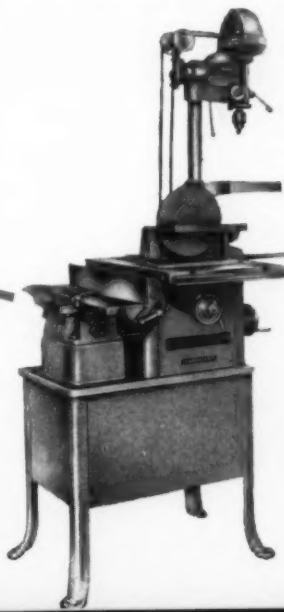
DOUGLAS L. McLEOD
Coast Counties Gas & Electric Co.

Winners of 1st AWARD in Jingle Contest and HONOR AWARDS in Essay Contest

The DeltaShop, a compact one motor combination of the most used power tools.

AWARDED AS GRAND PRIZE IN JINGLE CONTEST TO

H. H. SEXTON
Houston Natural Gas Corp.



AWARDED AS HONOR PRIZES IN ESSAY CONTEST TO

DONALD J. HEIM
Washington Gas Light Co.

ANTONE G. PRASIL
Wisconsin Public Service

J. M. PICKFORD
Northern Indiana Public Service Co.

C. V. MOREY
Consolidated Edison Co.

George L. Chapman, Wolverine attendant at Hammond, Indiana, transmits pipeline operations data to New York over a Bell System teletypewriter circuit

"Bell System furnishes us dependable communications at a price we can't equal"

—says Cyrus S. Gentry, President of the Wolverine Pipe Line Co.

Flexible, low-cost communications is what Wolverine Pipe Line Company is getting by renting private line teletypewriter service from the Bell System.

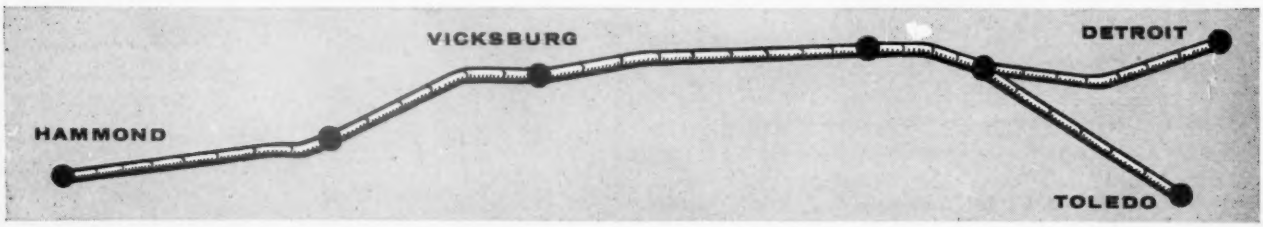
From Hammond, Indiana, products are started along the 295 miles of 16-inch pipe line to Detroit and Toledo. By using a Bell System teletypewriter circuit the operator starts or stops the big high-pressure pump at Vicksburg, 125 miles away.

Hundreds of miles east in New York, a dispatcher keeps round-the-clock watch over the Wolverine Pipe Line's seven stations. He gets reports and sends orders over Bell System teletypewriters.

"The expense of a privately owned system would be far in excess of a rented circuit," says a Wolverine official.

To find out how your communications efficiency could be improved, and costs lowered by using Bell System service, ask your Bell Telephone representative.

BELL TELEPHONE SYSTEM



Editorial:

Man Talks to Himself

LET'S just face it, Carlson, you've been writing and talking a lot about a unified industry—with reasons why it should be—and some ultimate consequences if the gas industry does not unite. But, have you really faced the question: *are you being realistic?*

There are some utility people who contend, seriously, that the gas industry should NOT be a coordinated one, from producer-through-distributor? Did you know that? Well, just make sure you understand: they've said so during the past month.

You keep running a line on the values of mutual cooperation in a coordinated industry, don't you? Cooperation by whom, with whom? Aren't you saying that you think the utilities should cooperate with the producers, now that Federal regulation of gas production is on the books? You probably do believe that if all the segments of the industry drew closer together that producers would cooperate with utilities, and with pipelines.

Bring yourself up-to-date! There are some utility men talking today about returning to manufactured gas. Did you know that? Well, they are and they are backing up their talk with figures. They say high-Btu oil gas manufacture is now at about the same cost level as purchased natural gas. What kind of cooperation do you call that? When some gas costs have gotten to the point where fuel oil is making sales tough even for interruptible gas, your coordinated industry story really is hard to take. But, those are the facts.

And another thing—you've said a lot about the "vast difference" in the operations of a producer from the operations of a utility or pipeline—all about risks and uncertainties and costs. But, are you aware that some utility executives have stated and some others have agreed that the producers *should be regulated,* just as pipelines and utilities are regulated? They're serious about it, too. They ask the question: how can two be regulated and one be unregulated? And they *know* about the search for gas and the way it is produced. Do you still think the gas industry can be coordinated?

Yes, we recall H. K. Griffin's recital about the cotton industry and his parallel with the gas industry. But, the cotton industry is not a utility and does not have to deal with Federal, state and local agencies in the production, processing and utilization of its product.

You still think that the outline for coordinating the gas industry might be found in the cotton industry's book? Carlson, don't you ever let go of an idea?

Yes, John Merriam's teamwork presentation is more recent than Mr. Griffin's plea for unity, but what did he say? He said the gas industry dissension is intolerable, it cannot continue, it must be stopped, it can be stopped. That's what he said, isn't it? But, did he say *how?* Oh, you think that the industry—producers, pipeliners and distributors—might get together and put meat on that idea, do you?

Who's going to make the first move and what will that move be? The Gas Industry Council! There you go with that statesmanship approach again.

Haven't some men in the industry told you and told you and told you that that idea is for the birds? You know they have, so why don't you restring your bow? Aren't there enough industry associations, now? Yes, yes, you've said it MUST NOT BE AN ASSOCIATION, but that's what many people think it would be, despite your lofty protestations.

As for your coordination plea—and Mr. Griffin's—and Mr. Merriam's—the producers are picking up their own fight and fighting it, without your "fully constituted industry."

Oh, you don't like the fact that their fight looks too much as though it is the *oil* industry telling the *gas* story! But, you must admit they're rolling out a story, rather than watching the mail for FPC to issue Order No. 174-W. They're up to 174-B now, you know.

Think the full-industry approach would be better, eh?

There's no question about it, Mr. Editor, a lot of time would be required to bring about the unification that you crusade for. A lot of time, indeed, after the idea got off dead-center. And it will take a *lot* of convincing to get a *lot* of people to go along with you and Griffin and Merriam and all those who agree.

Well, you'll go right on with your determined opinion that the real strength in the gas industry will be shown only when producers, pipeliners and utilities get together to coordinate for the highest-possible mutual advantages, so . . .

THE INNER VOICE OF

Wesley W. Carlson

FEB 14 1955

New Instruments Used in Ohio For Geophysical Surveys

NEW equipment which registers man-made earthquakes—so small they can be felt only a few yards away—recently had its first test in charting Ohio's underground formations. The equipment is the latest in modern developments toward discovering natural gas.

A crew of geophysicists made the tests recently in Medina county. There they took seismographic recordings of the echoes of small explosions, near the surface, from as deep as 1½ miles. These geophysicists worked in cooperation with The Ohio Fuel Gas Co.

W. E. Ferguson, vice-president, production, Ohio Fuel Gas, pointed out that charting underground formations is an important step in locating areas favorable for exploring for gas and oil.

"We believe these tests may prove valuable . . . to the entire gas and oil industry in the Appalachian region," he said.

Ohio Fuel had previously charted the same area, using drilling logs and surface geology in determining the contours of rock layers which underlie the surface. The results of this recent test are still under study but preliminary comparisons with records of wells drilled in this area indicated a high degree of accuracy, Ferguson said.

The new equipment was brought to Ohio by representatives of Houston Technical Laboratories, Houston, and of Geophysical

Turn to page 39—GEOPHYSICAL

CAREFUL! ***Above***—**Geologist Norman Harding of Houston lowers 15 sticks of dynamite into hole as he prepares a blast for seismograph recording. This was part of recent Ohio Fuel Gas Co. test of new underground formation-charting equipment. Watching are Herbert F. Enkemann, Ohio Fuel northern production superintendent; Carl J. Hauck, general superintendent of production.**

BANG! ***Above, right***—**Water and mud shoot from hole as geophysicists blast. Vibrations set up by explosion are recorded on equipment in the station wagon, foreground, to help find gas.**

RESULTS. ***Right***—**Geophysicist Robert Graebner of Dallas, studying chart from new-type seismograph. Grouped around Graebner are Bernard A. Floto, geologist, Ohio Fuel Gas engineer, Donald Hubbard, and Carl J. Hauck.**

Jane . . . of Columbus

JANE and her gas well rig.

CERTIFICATE of appreciation was given Miss Magruder by Henry E. Brokaw, president of the Columbus Exchange Club. Chart she used to illustrate a storage well is in background.

TRADITIONALLY, the natural gas business is strictly he-man—from the production fields to the kitchen range. It's a business that calls for brawny men, who can battle the weather at its worst, who can handle huge machinery, heavy pipe and tools.

The "woman's touch" was confined largely to the *home service department.*

Now—the fairer sex has invaded another part of the gas man's domain. In The Ohio Fuel Gas Company, a pert young lady is doing a job that's unique in the gas industry.

She gets paid to talk—something that all women are said to do, anyway.

When Ohio Fuel Gas is called upon for a speaker, by service clubs, schools or church groups, they most often find that the speaker is referred to as "Jane."

Jane is Miss Jane N. Magruder of the Information Department. She's a mite of a girl, with green eyes and sandy hair, but she represents the huge company. Her job is to tell the story of The Gas Company's operations in Ohio. That's a man-sized job—done by a lady.

Miss Magruder travels almost constantly. Her schedule may call for her to speak today in Pomeroy on the Ohio River, tomorrow at Lorain on Lake Erie.

Carefully directing her activities is William F. Smiley, information director of Ohio Fuel Gas.

Results of the speaking program, slightly more than a year-old, speak for themselves.

Miss Magruder reached an audience of more than 66,000 people during 1954. She made 120 talks, including one appearance on television, and she was heard twice over radio.

Two basic talks are given by Miss Magruder. One is titled, "Cold Front Ahead." In that talk, she tells of the tremendous effort necessary to deliver gas to heat some 400,000 Ohio homes on a zero day. Her other talk, "Underground Expressway," points out how Ohio Fuel's vast underground pipeline system and its underground storage fields serve Ohio homes and industries with natural gas. Her talks are tailored to fit the time allotted by any group and conditions in the towns where the talks are given.

Several "gimmicks" are used by Miss Magruder to emphasize important points in her talk. A drilling rig, made from a child's erector set, is one of the most effective. The rig can be taken apart in two sections. One represents the tremendous amount of gas that must come from underground storage on a cold winter day; the other shows that only 5% of the gas used by Ohio Fuel customers on a zero-day is produced in Ohio.

Most of the talks by Miss Magruder are used in connection with cleverly filmed sound-color movies that fit perfectly into a luncheon club program.

The movies were made by the Columbia Gas System, Inc., parent company of Ohio Fuel. These films are available for general use. They include "The Toughest Inch," "Eternal Flame," and "Dan and Gus."

Tremendous success was achieved with a Columbia movie, "River in the Way," produced in the summer of 1953. It tells the story of how the Gulf Interstate transcontinental pipeline was laid across the Mississippi River. Ohio Fuel has shown it 319 times to 220,431 people. Many of these showings were in connection with talks by Miss Magruder.

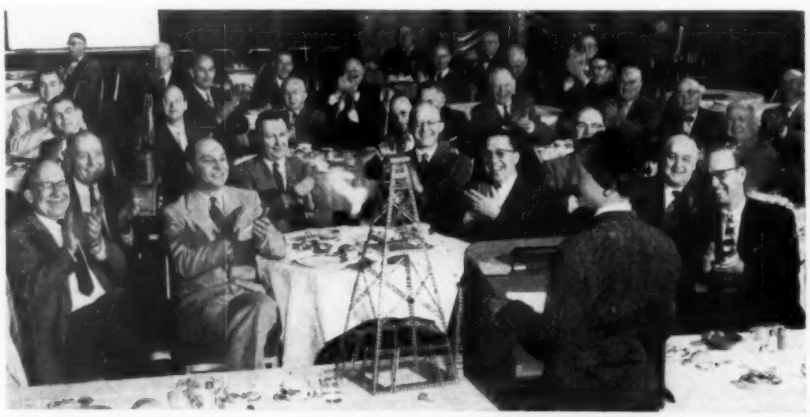
A new film, "More Gas For Centerville," has already been shown 78 times by Ohio Fuel to 32,561 people in the past two months. This film tells the story of the tremendous construction program necessary to deliver gas to Ohioans.

Altogether Ohio Fuel has shown Columbia films 2,412 times to nearly 490,208 people.

Audience reactions to the films and Miss Magruder's talks have been good.

Ohio Fuel officials believe that through the speech-film program a better understanding of the company's problems has been brought to thousands.

They're convinced, too, that Jane and her "woman's touch" have helped.



JANE speaks to a typical luncheon club group. Here, at a recent meeting of the Columbus Exchange Club, members applaud Ohio Fuel's Jane Magruder.

AMERICAN Gas Journal FEATURE

Economics of a Planned Meter Retirement Program

★ FIRST-PRIZE WINNER IN ROCKWELL CONTEST ★

by George K. Bachmann

General Superintendent of Meters

Public Service Electric & Gas Co.

New Jersey

REAL satisfaction to the gas company and its management of having a planned meter retirement program allowing new meter replacement purchases can exist only if the program is based on economic study and fact. Such study must include aggregate information on at least sample groups of meters in various age categories, as well as intimate knowledge of the construction and performance of the various types of meters in service.

Under certain circumstances, it is possible that meters of advanced age may be mechanically unsound, or even unsafe to the consumer. In this instance, there is essentially not an economic but an operation problem that does not properly fall under the subject of this essay. Of course unsound operating meter conditions do have economic connotations but the subject of this article is not ordinarily expanded to include such considerations.

Four points of economic search must be covered in a comprehensive study of meter economics. These are:

1. Depreciation.
2. Cost of removing from service and testing.
3. Maintenance cost.
4. Loss in revenue due to inaccuracy.

The charts, Figures 1 and 2, give a graphical description of cumulative life meter cost. Note that the conventional chart, Figure 1, has smooth-type curves that result from group statistics of meter maintenance involving large numbers of meters. The other chart, Figure 2, with sharply reversing curves, indicates a sample periodical maintenance cost history of an individual meter, which is an illuminating consideration in this paper.

Although this essay is largely based on tinplate steel meter considerations and performance, the methods and findings are fundamental to studies of meter obsolescence regardless of whether these are tinplate steel or hardcase meters.

Generalities of meter life economic study

Remarks appear here regarding each of the four points of economic search. The principal remark to be made, however, applies to all four points, collectively. *Include all four points*—do not write off any one of these with a preliminary conclusion of their unimportance in a meter economic life study. They may have hidden values which only application of factual data will bring out.

Taking the four points individually, we note the following:

Point 1. The depreciation method employed by the gas company must be applied in the meter study. Although the individual may theorize that, for instance, a sinking fund method gives a true picture of depreciation cost, it is useless to use the sinking fund method if the accounting department prefers straight line or Iowa State College condition-percent group properties method, and so reports in its financial statements.

Points 2 and 3. In general, a major reduction of removal, test and repair costs, which is possible only by extending the meter periodic change period, has not been accomplished in the past through excellence of meter construction and repairs in areas where manufactured gas was prevalent, but is now possible and probable through the advent of natural gas. In economic study today we must rely on performance record of meters in natural gas areas, although the particular gas property under study has only a past manufactured gas history. To do otherwise would be to ignore the tremendous changes in our industry. What to expect meterwise after conversion to natural gas has been given great publicity in gas association meetings.

Point 4. Loss in revenue due to inaccuracy. This point of economic search is of great importance with regard to old style design meters which lack durability in meter materials, and any meters subjected to chemical effects of manufactured gas. Today, customer refunds on meters removed and intested with a fast result must be considered in this point of search, as supporting evidence that billing overcollections from these customers was actually made, often is confusing and most doubtful.

No overall economic study figures based on past performance of a gas company is given in this essay, because the detailed, lengthy methods of such studies, combing the four points of economic search, are to be found in American Gas Association Proceedings of recent years, particularly those of Washington Gas Light Company and Public Service Electric and Gas Company of New Jersey. These studies have a limited value today, because the conclusions, drawn from large-scale statistical data, were based on continuation of relatively stable gas conditions, mostly manufactured gas. However, with the use of these studies as background material, we may make certain observations in order to obtain worthwhile conclusions to present meter economic problems.

A review of a well-known thorough study of optimum meter life, presented by David Allen of Washington Gas Light Company in 1938, reveals an observation that has great value today. Careful reading of that paper, which concludes that meter life should average about 21 years, brings to light that a change in the type of meter purchased had occurred 21 years before the study was begun. Reference is made in the following section to past meter design changes of major consequence.

Current peculiarities

A study of economic meter life must, of course, be attuned to present conditions. At the present time, gas companies are largely either veteran distributors of natural or mixed gas or, as those in the Eastern part of the United States, newcomers to distribution of natural or mixed gas, with consequent disturbed meter proof problems. The present cost of a rediaphragm repair (largely needed to recondition meters under a gas conversion program, but also occasionally required as a result of failure under natural gas operation), together with the expected life of such reconditioned meters, must be balanced against the cost of a new meter and its life before extensive repairs are needed. The present range of meter life as practiced by most gas companies varies, using approximate figures, from a minimum average life of 21 years to a maximum of 35 years or more. These age figures are multiples of 7 years, a common periodic change period.

Gas companies either have or look forward to a change period of at least 10 years, and all efforts should be directed to realization of such a goal for, as mentioned previously, only thus can a major reduction in metering cost be effected. The meter installed in service today is the one that must be depended upon at the end of today's average 7-year periodic change period, in the case of companies having undergone a conversion, to give a performance, largely gauged by intest proof, of sufficient average excellence to allow application to the public service commission for the 10-year periodic change period. In the case of veteran natural gas companies, application for longer periods of service is expected.

We now reach the principal question. Is it economically realistic, in view of our expressed goal, to make extensive repairs on meters in service 14, 21, 28, and 35 years old? This question does not have a simple

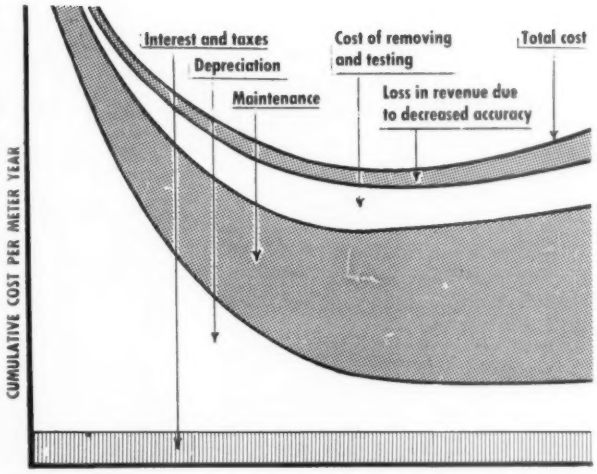


Figure 1. **Age of meter (group statistics)**

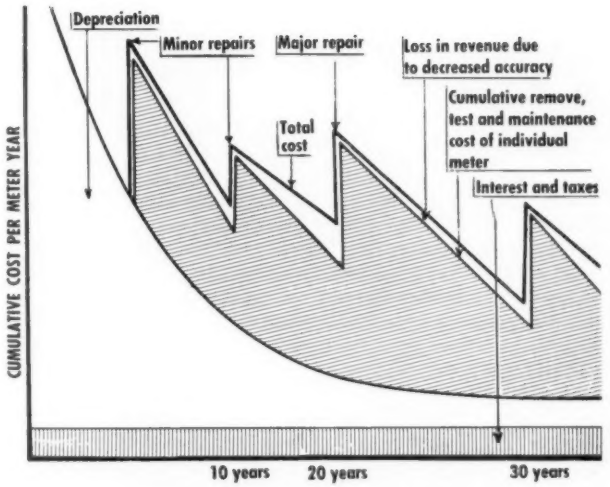


Figure 2. **Age of individual meter**

answer. (Here again the service periods used are multiples of 7 years. These multiples are not meant for specific meter age, but are meant to apply to meters in the same general age, whether multiples of a periodic change period or not.)

Major changes occurred in gas meter design approximately in the middle 1920's. These resulted partly from the consolidation of a number of relatively small meter manufacturing enterprises to form the outstandingly largest manufacturing company of that era with resultant standardization of meter design.

Meters purchased approximately before 1925 probably averaging 35 years of age are presently repaired by many gas companies, but it must be a policy of expediency rather than economics that allows such repairs. Features of such meters of the 5 lt. size—as lead stuffing boxes, light gauge flag rods, narrow flag-to-rod joint, soft metal carriage brackets, 8" small capacity diaphragm, no brass bushing in white metal valve cover arms, non-riveted screws, long side pipes, putty index glass, click type reverse stop, etc.—are money losers. Further their capacity is either low, in the vicinity of 90 cfh, or too high for the quality of construction, as in the old style 5A meter with its hollow wearing and oversized valve covers. Failure to replace these meters with meters of modern design can only result from failure to face the problem.

Much more can be said in defense of repairing meters purchased in the late 1920's and thereafter. These meters have none of the faults enumerated above for meters of earlier vintage. Remarks on the comparative qualities of new replacement meters are made in the following 3 paragraphs.

Tinplate steel meters of present modern design, although fundamentally the same meter as those mentioned in the previous paragraph, have, of course, a number of important improvements, such as overcast solid brass valve cover arms, the presently preferred 4-circle index, improved index test dial, 100% solder seal index glass, etc. In a few features, such as the use of 4a tinplate in place of the present 2a, and such as the heavy metal 5B type valve cover in place of the present 5B lighter metal or 5B bakelite cover originally designed during war emergencies, the construction of the older meter, not having been affected by international conditions, is or was slightly superior.

The so-called "disposable" meter is making its appearance on the market at the time of this writing. "Disposable" is really a misnomer for this meter which is designed for minor repairs only. Too little is known of the price and performance of these meters at this time to include them in a study of meter economics.

Hardcase meters in either aluminum or cast iron have today revolutionary or greatly improved design, together with long wearing materials in moving parts. The probable life of these meters is almost unlimited, except possibly for obsolescence brought on by future improvements. There is a difference of opinion among gas operators as to whether the performance of hardcase meters, using generally higher crank speeds for equal flow, and various style of diaphragms, is as good, equal to, or better than that of tinplate meters. The purpose of referring to a comparison of tinplate and hardcase meter performance is only to point out that a complete survey of economics of replacing meters from service must include consideration of the hardcase meter, with its particular adaptability to outdoor sets. Local performance experience is the key to the answer to the relative desirability of tinplate or hardcase meters.

Returning to the question of the wisdom of replacing fundamentally soundly designed meters purchased within the past 14-to-28 years, their consideration is important because of the great volume of meters involved. The approach to this problem must be made via the following questions.

1. Has physical deterioration of the 21-year old meter to an appreciable extent been avoided?

The average situation is about as follows, although local conditions must be known for the individual situation. Meter age shown is an approximate figure.

14 years age	*21 years age*	*28 years age*
Yes	Probably	No

2. What is the rediaphragm cost compared to the purchase price of a new meter?

	14 years age	*21 years age*	*28 years age*
Average situation	60%	65%	70%

3. In units of the goal of a 10-year age period what is the expected life of the rediaphragmed meter, with sound metal skeleton?

	14 years age	*21 years age*	*28 years age*
Average situation	20 years +	10 or 20 years, depending upon meter condition and quality of repair.	10 years

From the answers above, we become aware that the *critical* question arises not when a meter is in the 14-year age bracket (meter to be repaired) nor when in the 28-year age bracket (meter not to be repaired), but when it is in the 21-year age bracket. If a gas company is so fortunate as to have plant and labor conditions allowing a rediaphragm repair at 5-to-10% less than the estimated 65% of cost of a new meter, it should repair the 21-year old meter. This is so because at repair cost of 65% of the cost of a new meter, the maintenance cost of the repaired meter per year of operation for another 20 years will necessarily be quite close to the cost per year of operation including depreciation and maintenance of

Turn to page 24—**METER RETIREMENT**

Gas Industry Looks to New Highs

Year-End Statement

by F. M. Banks

President
American Gas Association
President
Southern California Gas Co.

GAS utilities and pipeline companies in the United States again achieved new record levels in number of customers, in volume of sales and in gross revenues, during 1954. Proved recoverable reserves of natural gas stood at new highs and gross net assets of the gas industry rose to a record $14-billion. All estimates made by the American Gas Association indicate that the major factors which helped lift the industry to record highs in 1954 will continue in effect. There is every reason to believe that the gas industry will go on to establish new records again in 1955.

Natural gas systems added nearly 18,000 miles of pipeline to the huge national network, bringing natural gas to some new areas and augmenting supplies in areas already served. Natural gas now supplies about 25% of the nation's energy and more than 95% of all gas sold by utilities is natural gas.

The utility and pipeline companies spent more than $1-billion in 1954 for new construction and expansion of present plant. The industry expects to spend almost $1-billion during 1955 and it is estimated that it will spend $4-billion on new construction and expansion in the 4-year period, 1954 through 1957.

New customers are being added to gas utility mains at a rate of nearly 800,000 a year. This rate is expected to continue for about the next three years. It is estimated that the gas companies will be serving nearly 29 million customers at the end of 1955.

The gas utilities were serving approximately 28,000,000 customers at the end of 1954, including about 260,000 LP gas customers served directly by gas utility companies. This new record high represented a gain of about 750,000 customers or 2.8% over the 27,250,000 customers served a year earlier. In addition, about 7,000,000 customers use LP gas in areas not reached by gas utility mains.

More than 22,000,000 customers were served with natural gas at the end of 1954, a new record and a gain of 5.2% over 1953. Manufactured and mixed gas customers dropped about 5% under 1953 to total 5,770,000 at the end of 1954.

Sales of gas in 1954 aggregated 60,750,000,000 therms, also a new record. This represented a gain of 7.6% over total sales in 1953. Natural gas sales reached a new high at 57.5 billion therms, up 8% over 1953. Manufactured and mixed gas sales totaled 3.22 billion therms, up about 1% over the previous year.

Revenues from the sale of gas passed the $3-billion mark for a new record. The 1954 total of $3,013,000,000 was a gain of 10.8% over 1953. Natural gas revenues increased 13% to total $2,544,000,000, or about 84% of total gas revenues. Manufactured and mixed gas revenues gained slightly over last year to total $448,000,000.

Natural gas systems grow

Natural gas systems added about 17,500 miles of gathering, storage, transmission and distribution mileage to their lines, bringing the total natural gas pipeline in the United States to 413,000 miles. With an additional 50,000 miles of pipe carrying manufactured and mixed gas, the nation's system of utility gas mains and pipeline totals 463,000 miles, enough to circle the globe 18 times.

Natural gas reserves

Proved recoverable reserves of natural gas at the beginning of 1954 totaled 211.4 trillion cubic feet. This was an increase of 11.7 trillion cubic feet over estimated reserves of 199.7 trillion cubic feet in 1953. This gain was made in spite of record production of 9.2 trillion cubic feet of natural gas during 1953.

These estimates include only proved recoverable reserves. They do not take into consideration the full extent of potential reserves in new areas now being explored, such as the offshore deposits in the Gulf of Mexico off Louisiana and Texas. Nor do they include the great fields of Canada that are being extensively developed today. It has been conservatively estimated that natural gas reserves in the United States and Canada may be well in excess of 600 trillion cubic feet.

New discoveries of natural gas in 1953 added about 7.1 trillion cubic feet of new reserves, as compared with 5.4 trillion cubic feet added through new discoveries a year earlier, emphasizing the important increase in exploration activities.

Underground storage

To serve the constantly growing markets, especially for gas househeating, more and more use is being made of underground storage of natural gas. At the beginning of 1954 there were 167 underground storage fields in 17 states, having an ultimate capacity for storing 1,735 billion cubic feet of gas during summer months for withdrawal during the winter peaks. The gas industry is expected to spend about $144 million on underground storage facilities in the 1954-1957 period.

Industry growth

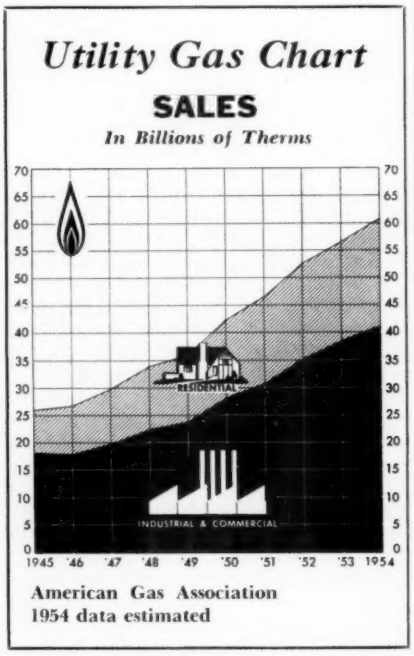
Overall sales of the gas industry are expected to total nearly 75 billion therms by the end of 1957. This would represent an increase of 25% over sales in 1954 and a gain of 32% over 1953 sales of gas. It is anticipated that gas househeating requirements in 1957 will be about 53% higher than space heating requirements in 1953.

To meet these increased demands for service, the gas industry will need 4.6 million tons of steel pipe between now and 1957 year-end. Of this total, about 2.9 million tons will be in the form of 16" diameter or over, primarily used for gas transmission lines. An additional 134,000 tons of steel in other forms, and nearly 500,000 tons of cast iron will be required by the industry in the 1954-1957 period.

Under the impetus of improved techniques, services and utilization, the gas industry looks for a bigger share in residential, industrial and commercial markets in 1955. The industry is alert to its competition and is ready and eager to meet it. This favorable attitude must result in further new records in sales, customers and revenues in 1955 for the gas industry.

F. M. Banks

T. T. Arden



American Gas Association
1954 data estimated

No Lack of Opportunity in 1955

Year-End Statement *by* T. T. Arden

President
Gas Appliance Manufacturers Association

Executive Vice President
Robertshaw-Fulton Controls Co.

IF the combined gas appliance industry doesn't do 10% more business in 1955 than in 1954 it won't be for lack of opportunity.

Various authorities in government and in private and public home-building agree that the new year will see all-time records set in home construction.

Besides the possibility that more than 1,300,000 new homes will be built, there is a great opportunity for us in the fact that Americans will spend better than $6,250,000,000 on rebuilding old dwellings, adding living space, modernizing kitchens, laundries and basements, and generally providing the setting for a huge replacement market for appliances.

GAMA headquarters figures that by the end of 1955 there will be at least 3 major uses of gas in the average home where only one existed in 1945. One of the main reasons for this, besides the fact that public acceptance of gas is increasing annually, is that many major builders and realty operators have begun to install the entire family of gas appliances as standard equipment.

Perhaps the best clue to our immediate future is the action taken by manufacturers, distributors and dealers in the final quarter of 1954 to replenish low inventories.

Utilities return to merchandising

Another sign of the times is the beginning of a return by many gas utilities to their former status as aggressive merchandisers of gas appliances. Apparently many of those who left this field several years ago to concentrate on building their fuel distribution systems and converting to natural gas are now going back to direct selling of gas appliances or closer sales cooperation with dealers.

Still another healthy sign is the tremendous demand being made by manufacturers on the industry's laboratories for approvals, improvement of present products, and extension of new-products research. American Gas Association's laboratories at Cleveland and Los Angeles tested almost 5,000 appliances and accessories in 1954 and the rate of application is increasing constantly.

It should also be noted here that the new American Standard National Plumbing Code, which GAMA helped formulate, will begin to have a beneficial effect on appliance sales during 1955. Its purpose is to simplify installations of comfort heating, water heating, cooking and other domestic gas equipment.

Opportunity beckons on other fronts, too. Early in 1954, the natural gas utilities and pipeline companies planned to spend $3,551,000,000 during the 1954-57 period, including $1,708,000,000 for transmission and $1,331,000,000 for distribution. In addition, their plans called for expenditure of $364,000,000 for piping other types of gas, for a grand total of $3,915,000,000.

It's a matter of record that these plans are being realized right on schedule. As to what they mean to the gas appliance industry, consider the findings of a utility study begun in 1953.

Residential gas use increasing

This study showed that by 1957 the number of residential gas customers throughout the United States would increase 12.3%, while the amount of gas consumed would rise 45.2%. The much higher figure for gas consumption meant that people not only would continue to convert to gas, but also would use gas for more purposes in the home than ever before.

The house-heating branch of the industry certainly has been making this prediction look good. Comparative records show that 1954 sales of gas central heating equipment were running 14% ahead of 1953, while the sales of oil burners, the nearest competitor, had fallen 13% behind 1953 figures.

It is now reasonable to expect that gas-heated homes will total 15,000,000 by the end of 1955 and will exceed 17,000,000 by the end of 1957. Meanwhile, incomplete returns on shipments of gas ranges, water heaters and central heating equipment in 1954 indicated that the total in these categories alone would top the combined total of 5,164,900 units shipped in 1953.

In addition to the rosy outlook in urban markets, there is the possibility of a banner year for gas appliances in the rural territories. The number of domestic, commercial and industrial users of LP gas is likely to reach a new high of over 7,500,000, and there is good reason to believe that the ratio of rural to metropolitan appliance sales in 1955 will increase substantially. Rural customers already absorb nearly 25% of our output.

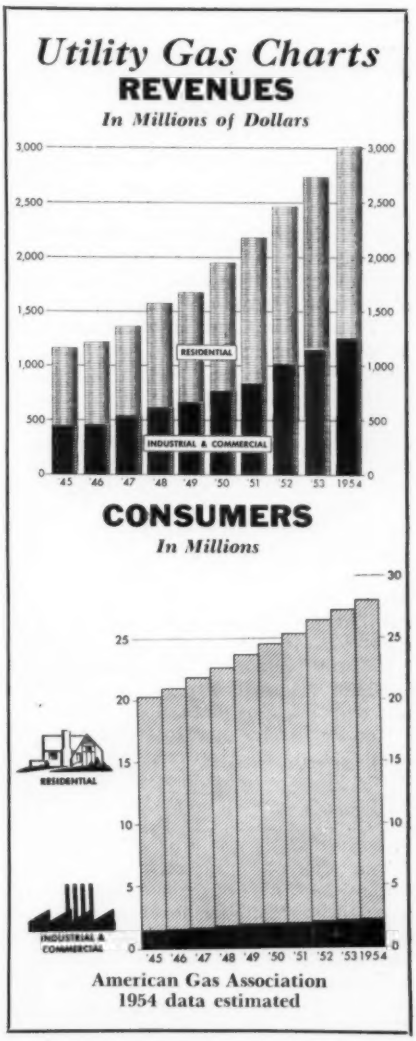
Commercial and industrial use gaining

The use of gas for commercial and industrial purposes continues to zoom. It's no secret that gas cooking now accounts for 95% of the more than 65,000,000 meals served daily in public eating places and institutions and, if the announced programs of highway and institutional construction go ahead on schedule, the commercial equipment producers are certainly headed for new heights.

A utility survey begun in 1953 indicated that industrial demand for natural gas would increase nearly 30% during the 4-year period ending in 1957. A good part of that gain already has been achieved, and research continues to add many new processes to the more than 25,000 existing uses for gas in industry.

With opportunity banging at every door, all branches of the industry are stepping up their promotional efforts, and the outlook in this respect—as typified by developments in the gas industry development program—is for closer cooperation among manufacturers, pipeliners and utilities, than has ever been accomplished in any year of our history.

The industry's own prospects are, of course, irrevocably linked with the general outlook for the Nation. But it doesn't take an expert to prove that our present national economy is made to order for any industry with a good product and a proven capacity for public service. The gas appliance industry would appear to qualify.



New Process for Protecting Steel Uses Gas Equipment in Heating

Brooklyn Union and Bryant cooperate on design problems

THE inherent operating and economic features of gas and gas utilization equipment have been applied to another metallurgical process which permits the use of mild or low-alloy steels, instead of requiring the costlier high-alloys used for some parts that are to be subjected to oxidizing or corrosive conditions.

A new process, called Alumicoat, has been put into production for coating parts with molten aluminum and, at the same time, securing some diffusion of the aluminum in the steel itself. Thereby, a secure bonding is achieved through what amounts to an aluminum-steel compound at the interface.

The process, patented by General Motors Corp. and licensed to Arthur Tickle Engineering Works, has 3 steps: cleaning, fluxing, dipping or bonding.

Cleaning the parts is basic to the process in order to assure proper fluxing and dipping or bonding. The parts are immersed in a caustic solution that is maintained at a temperature of 980 F by gas equipment. Selective coating of the parts is possible by appropriate masking to avoid the effects of the caustic solution.

In the fluxing operation, the parts are placed in a patented salt bath.

The parts are dipped in the molten aluminum—melting point, 1200-1400 F—to produce the coating. In this gas-fired equipment, the iron-aluminum bond is created in accordance with the material being coated and the ultimate utilization requirements. Aluminum penetration in steel has been found to have a depth-range of 0.0015″-0.001″ and the outer coating thickness ranges from 0.005″-0.001″. The depth-and-thickness are controllable through time and temperature of exposure of the parts to the aluminum bath. Tests have been made with low carbon steel in aluminum temperatures that have exceeded 1,900 F. When the aluminum temperature is above the melting point, the diffusion into the steel takes place.

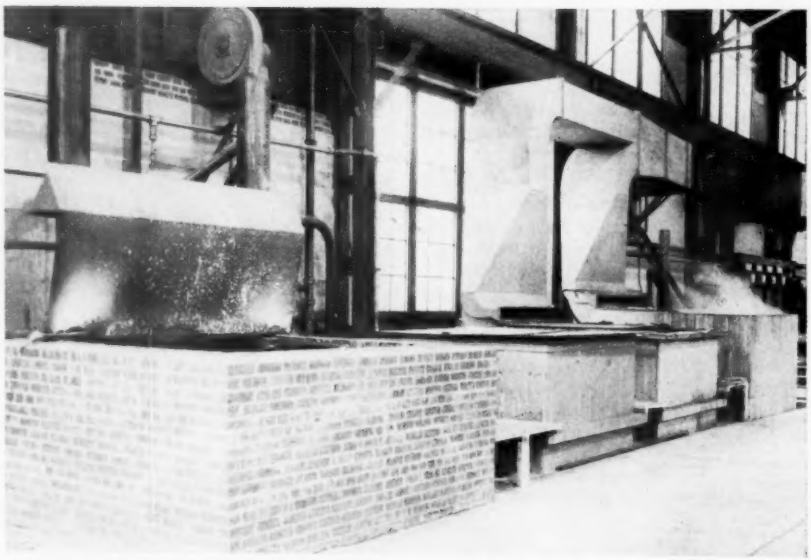
The equipment and gas system at the Tickle plant, in Brooklyn, was installed after collaborative planning by William A. Reynolds, industrial sales engineer, Brooklyn Union Gas Co., and Bryant Industrial Products Corp.

The Alumicoat process is used to protect a wide variety of parts such as exhaust pipes, jet aircraft components, petroleum refinery equipment and air tubes for ships' boilers.

Tests of coated parts have shown that adequate protection against oxidation has been provided for operation of the parts at temperatures that are at least as high as the safe operating temperature of the base metal, according to a Tickle executive.

The extent to which protection against corrosion is provided will depend upon the characteristics of the individual exposures to which the coated parts are subjected.

The Tickle Engineering plant has been a customer of Brooklyn Union Gas Co. for 50 years and is currently using approximately 20MMcf per year in its plant floor area of 145,000 sq. ft.



CAUSTIC cleaning solution, used before fluxing and coating steel parts, is gas-heated in brick-covered tank, *above*. Parts are given 2 cold washes and a hot bath after cleaning, to stop the caustic action.

COATING in these tanks of molten aluminum, *below*, provides steel parts with slight diffusion of aluminum as well as surface coating. Processing is more economical than using high-alloy steels.

How San Diego G&E Co. Works For Best Public Relations

THIS is the fourth in a series of exclusive interviews with gas industry executives on public relations. Here, Emery D. Sherwin, president, San Diego Gas & Electric Company, tells something about the thought and efforts put forth by his company in the interest of achieving the highest-possible public relations.

His words make it clear that good public relations actually start with good employee relations and that he practices what he preaches. The San Diego company not only works at the full-time job of public relations, it uses the services of qualified outside counsel to measure the effectiveness of its work. As a result, San Diego is widely-recognized as an effective point of application of the principle that utility public relations programs pay off.

Mr. Sherwin also is president of Pacific Coast Gas Association.

Earlier interviews on public relations in this series were with W. E. Wilson, chairman, public information advisory committee, Independent Natural Gas Association of America (September 1954); Remick McDowell, chairman, public relations coordinating committee, American Gas Association (October 1954); and T. T. Arden, president, Gas Appliance Manufacturers Association (December 1954).

Other interviews will be presented in future issues.

AMERICAN Gas Journal FEATURE

Journal: Mr. Sherwin, just so we won't rehash a lot of profound truisms, basic fundamentals, and pet theories relative to the subject of public relations, we shall ask if you have read the earlier interviews by Messrs. W. E. Wilson, Remick McDowell and T. T. Arden on the subject?

Sherwin: I did, indeed, and slowly enough to digest the fundamentals, truisms, and even the definitions—which were not too-well hidden. Frankly, I will let those gentlemen write the book on public relations. It will be my job to put their better ideas into practice.

Journal: Are we to understand that you agree with a rephrasing of Mark Twain on the weather: "Everybody talks about public relations, but few do anything about it"?

Sherwin: No, I disagree! The idea of conducting one's business with an eye toward promoting good public relations is fast becoming a natural, everyday practice. Fortunately, this idea has been increasing in scope for a number of years. Most of us on the management and supervisory levels are today more analytical and more concerned over how our decisions will affect our customers' reactions toward the company. It is a profound truism, though, that we are certainly not experts and could make a wrong diagnosis. I could agree with McDowell that one of the most practical ways to avoid PR pitfalls is in the delegation of an individual to overall responsibility in the furtherance of good public relations. However, one individual cannot produce good public relations—even though it be a full-time responsibility—unless all employees are conscious of their responsibility to do their part in carrying out a program.

Journal: Well, that proves you did read McDowell's interview, but we aren't getting to how you interpret public relations in your own business.

Sherwin: That cuts the ground from under my professional observer status; I'll stay closer to the practical side of public relations, as I have seen it operate.

Over the years, we have received numerous letters from customers thanking our service crews for the professional way they replace lawn and shrubbery removed in the process of laying pipe. These letters are published in our employee magazine and two elements of public relations are in evidence, namely, a satisfied customer and a crew proud of its work.

Journal: That is certainly a practical application but a rather common practice among gas companies. Have you had other experiences with a public relations flavor?

Sherwin: True, the practice is common among gas companies, and is pretty generally taken for granted by the customers. We know they appreciate it whether they write to us or not.

I'll keep on talking, but with one stipulation: I subscribe to the theory "there's nothing new under the sun", and that any move in the interest of better customer relations probably is not new, and, fundamentally, could be applied in several forms.

For instance, I know it is not new to train employees in the friendly techniques of letter writing and telephone conversations—and that goes double for over-the-desk, counter, or threshold conversations. I further surmise that if a gas company is "the employees", then the way those employees act, dress, and talk both off and on the job, and even play when away from the job, has an influence on the public's attitude toward their company.

Journal: Here we go again, into the realm of profound supposition. It's clear that you believe that, among his closest friends, many an employee is better known for whom he works than for who he is. But how do you handle the fellow who claims that what happens after 5 p.m. is his business?

Sherwin: I didn't say you could do anything with that fellow. I just hope there are not too many of him in any organization.

Through prominently-posted, thought-provoking sayings we are trying to keep the number of this type to a minimum, not only for better company-customer relations, but for better social relations as well. This week's card reads: "One's tone of voice, face, and manner are the human touches that give words their greatest power." Not preaching—just seeds of human improvement.

Journal: And you said you weren't working very hard at public relations! Seems that you are already employing several elements of a good public relations program. What's this we hear about your "How are we doing?" meetings? Or, are you trying to keep something from us?

Sherwin: Nothing of the kind. Just thought they might be too common to mention. Once every 2-or-3 months we call all executives and supervisors together, at which time each major department head reports on "how he's doing." No secrets, no hold-backs of facts, and all questions answered. The grapevine does the rest, particularly on such subjects as wage adjustments and a change in major work assignments. Just to make sure all employees get the facts, a brief summary of these facts, as presented at the meeting, is mailed to key employees who, in turn, read, initial, and pass on to fellow department employees the report, as summarized.

Journal: Doesn't that information get fanned-out to segments of your public as well, and through a very authoritative source—an employee?

Sherwin: Naturally, and with full intent

Turn to page 36—**PUBLIC RELATIONS**

Price Indexes of Gas, Other Fuels and Electricity

RETAIL GAS COST UP 0.8% IN MONTH

October showed an increase of 0.8% in the cost of gas for residential space heating and for non-heating purposes, according to the September-October indexes of U. S. Bureau of Labor Statistics.

Increases in gas rates were reported for 2 cities in the latest BLS analysis, while in 4 others the thermal content adjustments accounted for the increases. These increases were partially offset by a credit adjustment in one city and a decrease due to adjustment of thermal content in another.

ELECTRICITY Net monthly bills for electricity were unchanged, on average.

BITUMINOUS COAL The net effect of prices for bituminous coal was upward, though there were mixed trends during September-October. Increases, ranging from $0.08 to $1.00 per net ton, were found in 8 cities. Decreases were reported, 13¢ to 34¢, in 4 cities.

ANTHRACITE Prices of anthracite advanced from $0.20 to $1.50 per net ton in 5 of the 9 cities surveyed by BLS.

FUEL OIL Retail prices of fuel oil were increased, September-October, in 10 cities. The index advanced 1.9%, however it was still 1.2% below October 1953.

Source: Bureau of Labor Statistics, U. S. Department of Labor (1947-1949 = 100.0)

	1954										1953			
	Oct.	Sept.	Aug.	July	June	May	Apr.	Mar.	Feb.	Jan.	Dec.	Nov.	June	Jan.
GAS														
Space heating	115.5	114.6	114.5	114.4	114.3	114.5	114.1	113.9	113.7	113.6	113.6	113.5	111.2	108.9
Non-space heating	109.7	108.8	108.8	108.9	108.8	108.9	108.8	108.8	108.8	108.8	108.8	108.8	107.2	106.4
Natural														
10 therms	100.5	99.4	99.5	99.9	99.7	100.0	99.9	99.9	99.9	100.0	100.0	99.8	98.7	98.3
25 therms	113.7	112.3	112.2	112.5	112.3	112.6	112.3	112.3	112.2	112.2	112.2	112.2	110.2	108.9
Manufactured														
10 therms	109.5	109.5	109.4	109.2	109.4	109.4	109.4	109.4	109.4	109.4	109.5	109.5	107.4	106.9
25 therms	110.3	110.3	110.2	109.4	109.6	109.5	109.6	109.6	109.6	109.6	109.7	109.7	108.4	107.8
Mixed														
10 therms	96.4	96.4	96.4	96.4	96.4	96.4	96.4	96.4	96.4	96.4	96.4	96.4	96.2	96.2
25 therms	100.4	100.4	100.4	100.4	100.4	100.4	100.4	100.4	100.4	100.4	100.4	100.4	100.0	100.0
All types combined														
10 therms	105.6	105.0	105.1	105.2	105.2	105.3	105.2	105.2	105.2	105.3	105.4	105.3	103.9	103.5
25 therms	113.8	112.7	112.6	112.7	112.6	112.8	112.6	112.6	112.5	112.5	112.5	112.5	110.7	109.6
ELECTRICITY														
Composite	105.2	104.9	104.8	104.8	104.5	104.5	104.5	104.5	104.4	103.8	103.8	104.2	104.1	104.4
SOLID FUELS														
Bituminous—All sizes combined	119.4	118.7	117.9	117.4	117.2	117.2	119.5	120.6	120.6	120.7	120.6	120.4	117.3	119.8
Anthracite—All sizes combined	128.5	126.5	126.4	124.7	124.1	123.1	130.2	135.0	135.0	135.0	135.0	135.0	130.6	135.9
PETROLEUM														
Fuel oil No. 2	121.0	118.8	118.5	117.7	117.7	118.1	120.6	122.1	123.2	121.9	120.9	122.7	117.9	116.6

Residential Appliance Shipments

Source: Gas Appliance Manufacturers Association (000 units)

	1954										1953			
	Nov.	Oct.	Sept.	Aug.	July	June	May	Apr.	Mar.	Feb.	Jan.	Dec.	Nov.	June	Jan.
Ranges															
Gas	170.5*	206.7*	203.9	179.4	134.5	174.3	163.8	172.4	188.2	152.9	137.0	134.4	158.5	166.6	169.2
Electric	—	96.4	113.8	86.8	91.4	98.1	94.5	106.0	131.9	125.3	116.4	84.4	63.7	129.2	124.8
Water heaters															
Gas	185.2	202.0	205.5	207.1	190.3	206.7	195.6	200.8	187.8	175.0	164.4	141.9	155.0	181.2	189.9
Electric	—	63.7	80.4	66.1	66.6	73.0	69.8	70.0	73.6	60.9	53.9	44.3	46.5	68.4	62.3
Furnaces, gas	71.7	77.3*	82.0	75.4	53.1	57.3	49.9	43.6	36.6	31.6	31.0	33.5	43.1	49.8	31.1
Boilers, gas	6.8*	10.8	10.9	8.9	6.0	6.2	6.0	4.3	3.9	3.0	2.9	3.1	5.7	6.2	2.7
Conversion burners	14.2*	32.2	35.9	29.4	19.9	19.7	22.5	14.7	7.4	8.7	8.8	8.4	15.6	24.8	9.7

* Preliminary totals.

Index of Yields: Selected Utilities Stocks

Expressed as percentages

	1954												1953		
	Dec.	Nov.	Oct.	Sept.	Aug.	July	June	May	Apr.	Mar.	Feb.	Jan.	Dec.	June	Jan.
Transmission companies	4.27	4.40	4.40	4.17	4.17	4.25	4.04	4.08	4.15	4.17	4.25	4.21	4.39	4.72	4.04
Transm. & distrib. companies	5.08	4.69	4.70	4.61	4.67	4.88	5.01	5.01	5.11	5.27	5.39	5.39	5.54	5.55	5.02
Manufactured & mixed companies	4.88	4.72	4.38	4.16	4.26	4.36	4.45	4.46	4.67	4.68	4.66	4.66	4.91	5.08	4.87
Class "A" electric companies	4.20	4.37	4.46	4.36	4.31	4.31	4.60	4.64	4.70	4.68	4.92	4.92	5.10	5.53	5.08
Class "B" electric companies	4.72	4.69	4.77	4.74	4.70	4.78	4.83	4.94	4.94	4.93	5.01	5.14	5.23	5.68	5.19

This is a straight arithmetical index of comparative yields obtainable on a selected group of gas and electric utility industry common stocks.

The companies comprising this index have been selected by the AMERICAN GAS JOURNAL as providing a representative cross-section of each industry, from the standpoint of geographical diversification and of the relative importance of the individual companies in their areas.

No effort has been made to weight the average to give effect to changes in capitalization or in dividend rates because the yields afforded on the issues reflect such changes. The index is designed to show the rate of return and not necessarily market movements on the stocks comprising it.

This index is compiled from: natural gas transmission companies, 5; natural gas transmission and distribution companies, 5; manufactured and mixed gas companies, 4; class "A" electric companies, 4; class "B" electric companies, 5.

Utilities in Favorable Position to Choose New Financing

by **John F. Falvey**
Financial Editor

WHILE public utility common stock prices, at this writing, are practically unchanged from the level of 2 months earlier, quotations for industrial shares have risen to new all-time highs, with the result that dividends paid thereon now are providing on the average a yield return of only about 4%. This is but the fourth time in history that such low return has been afforded on industrial equities, the previous occurrences having been in 1928-1929 when a speculative orgy was at its height; in 1933-1935 when average returns were being pared sharply by dividend reductions and omissions; in 1945 when share prices ran well ahead of the increase in dividends in the expectation that still higher disbursements eventually would be forthcoming.

With the period of 4% yield of only temporary duration on each of the 3 prior occasions—being corrected through price declines after both 1928-1929 and 1945, through increased distribution following 1933-1935—several factors not in evidence then are cited by leading economists to suggest that low stock yields may continue for some time.

Underlying the prevailing low yields are reduced bond yields now in effect and expected to continue under the Federal Reserve Board's indicated easy-money policy; increasing weight which investors are giving to retained earnings; confidence that the economy will remain stable under sound Federal government procedures; and the persistent increase in the flow of institutional funds seeking profitable investment.

At prevailing market levels industrial company common stocks yield about 25% more income than do corporate bonds. But it is important to recognize, the Federal Reserve Bank of Chicago points out in its recent discussion of business conditions, that this widened differential in favor of equities may be regarded as more apparent than real, if investors look forward to a period of "hard times" which will shrink profits and dividends. With less-gloomy anticipations, however, it adds, the heightened opportunities for maintaining or increasing income by moving out of current high-priced debts and into equities may prove quite tempting. In such a shift of investor interest, the easily marketable nature of common stocks will attract a substantial portion of the equity demands, and stock prices should tend to continue upward. Ordinarily, this price rise would prove to be self-limiting, since higher stock prices do not alter dividend payments; percentage return is lower at the higher price level.

"In its present environment," the Chicago Reserve Bank notes, "perhaps the more important influences of easy-money on stock values lies outside these narrow implications. Easy money has a generally-buoyant effect on the financial world and tends to create a climate in which the prospects for stocks, particularly the 'blue chip' shares of well-established companies appear to be attractive. To the extent that business men and investors believe that easy credit can foster higher levels of activity, their general outlook toward the future will be brightened. However, all holders of marketable bonds and other debt instruments will be cheered by increases in market value of such assets. The economy in general will have become more liquid, with greater freedom of fund movement which that implies."

Tangible evidence of this is afforded when a corporation can borrow money from banks and insurance companies at a low rate. Under such circumstances, the corporation's ratio of interest expense-to-income is reduced and its profits position improved. The greater the proportion of a firm's funds drawn from debt sources, the greater the influence on profits. These opportunities for bolstered profits tend to raise market price of company's common stock.

Compared with the so-called bull markets of the past, today's stock market is much less credit-based. In contrast to such periods as the late 1920's, the amount of stock market credit now oustanding is moderate, almost to the extreme. Although share prices now are at the best levels ever reached, loans to brokers from New York reporting member banks—for carrying securities—aggregate only $1,300-million. This stands out in bold contrast to the approximately $8-billion of brokers' loans which were outstanding just prior to the stock market crash in late-1929.

Bank loans to other borrowers for this purpose by local banks now amount to only another $386-million. Even allowing for inclusion of some such loans among business borrowings, it is evident that buying of stocks with borrowed-money is playing a very minor role in the currently-favorable market for equity stocks.

From the standpoint of retained earnings and of corporate liquidity, the position of domestic industrial firms has never been better. Whereas the tendency in formerly-prosperous corporate years has been for increasing plant investment to drain retained profits and to cause substantial increase in debt for expansion, practically all segments of industry today—with the exception of public utilities—are financing property and equipment additions principally from retained earnings and depreciation accruals. This means business today is not facing loss of liquidity which would halt upturn and reverse the favorable trend of business.

Corporate working capital at $95-billion

The total of corporate working capital now stands at about $95-billion, a new record high and twice the amount at the close of World War II. And borrowing is decreasing, interest charges currently taking only 10% of corporate profits after taxes, according to Department of Commerce estimates, against 20% in 1940 and 30% in 1929.

The best estimates currently available are that corporate expenditures for new plant and equipment probably will approximate $23-billion in 1955, compared with $24-billion in 1954. Even if inventories should be increased and included in this total, the figure is not expected to exceed $25-billion. Of the sum needed, depreciation alone should provide nearly $15-billion, a new high contribution, and retained profits after taxes should supply an additional $7-billion.

The various factors suggest that the public utility companies should not experience too much competition from companies outside their own field as they go about marketing the additional bonds and stocks which they will have to sell to provide the large sums they still will need to finance property and equipment additions.

Time-type of financing matter of choice

Freed from this competition for new funds, the utility companies are in a relatively favorable position—in fact, the best position they have occupied in a number of years—to choose the time and type of their new financing. Only the disinclination of utility management to add to already-large equity ratios in many instances, coupled with the desire to effect raising of new money in as cheap a carrying-cost manner as possible, will preclude their taking advantage of a favoring equity market. The lack of any substantial number of new issues is combining with soaring institutional demand for sound equities to create a potential shortage of suitable stocks.

Only the utilities hold promise for a continuing substantial supply of new equity issues. On the average for the entire corporate field the outlook—as expressed by leading economists—is for the increase in the supply of new common stocks to proceed at an even-slower pace in the next few years than has been witnessed recently. They predicate this opinion on the fact that corporate new capital requirements are declining. Working capital needs will not increase materially in a period of stable business which is now in evidence and which holds every promise of continuing, and plant and equipment spending shows a downward trend which should continue as the program of building defense and defense-supporting plants subject to rapid amortization is completed.

Higher market prices are in prospect

Not only does the dwindling need for industrial-company new funds leave the field pretty much to the utilities, but the increasingly-favorable earnings situation for industrial corporations, on the average, and the higher dividend payments in prospect on many of their stock issues should mean higher market prices both for industrial company stocks and utility equities.

INDEX OF YIELDS:

SELECTED UTILITIES STOCKS

See bottom of facing page.

AMERICAN Gas Journal FEATURE

METER RETIREMENT

Continued from page 17

a new meter for its first 30 years before rediaphragm repairs are needed, as follows.

Repaired Meter	New Meter	
Repair—$10.50 Extended life—20 years Cost/year—$0.52	Cost—$16.00 (tinplate) Life without major repair—30 years Cost/year—$0.53	$14.00-18.00 (hardcase) (Make savings allowance for greater advantage in outdoor sets.)

Certainly it is fair enough under today's relatively clean gas conditions resulting from a preponderance of natural gas, to conclude that if a repaired 21-year old meter will carry on for 20 years without further extensive repairs, a new meter of current substantial construction will carry on for its first 30 years without extensive repairs.

Summary and conclusion

Economic study as outlined herein leads us to planned schedule of meter retirement and replacement as follows:

I. World War I-era meters purchased as late as 1925 shall be retired without question.

II. Post-1926 purchased meters shall be discriminately treated as follows:

A. 14-year age bracket—repair (sound metal stipulated)

B. 28-year age bracket—retire and replace

C. 21-year age bracket—(sound metal stipulated)

1. If favorable local conditions of plant, labor conditions, and volume of repair exist (or a long term favorable repair contract) so that the rediaphragm cost is 55-60% of a new meter cost, repair these meters.
2. If the rediaphragm cost is 65% or more of the new meter cost, retire and replace with new meters.

Concluding remarks regarding the recommendation in part II-C-2, above, of the schedule of retirement and replacement in particular, and the philosophy of maintenance *vs* replacement of equipment in general are given here.

Anytime new equipment can be purchased and operated at a cost no higher than that of depreciated equipment, the desirable method of operating is that employing new equipment, which realistically maintains the book value of property. This is a desirable economic practice that applies not only to meters but to any property operated by a business concern. This economic practice is one reason the American economy has progressed faster than many other countries of the old world. In times of economic stress, such as war, the operator of relatively new equipment is in an infinitely better position with regard to survival than the operator of depreciated equipment.

There are times when money market conditions make it undesirable to issue bonds or other securities at a high interest bearing rate in large volume. In such instances the replacement of meters, using additional capital, may be delayed by financial considerations, in favor of carrying meter repairs as an operating expense. However, the raising of capital is essentially an extraneous matter in meter economics.

The time eventually arrives in the life of a meter that an extensive necessary repair, designed to prolong the life of the meter a period of years, results in annual maintenance cost over this prolonged period of years, approximately equal to annual maintenance and depreciation cost of a new meter, not needing extensive repairs for a period of years well in excess of the prolongment of the life of the repaired meter. It is then that the prudent public utility operator who *plans* to keep his meter plant in best economic condition grasps this opportunity to replace the old meter with a new meter at no added overall cost.

B. E. FRANCIS IS CHIEF ENGINEER OF NORTHERN NATURAL GAS CO.

Byron E. Francis became chief engineer of Northern Natural Gas Co., in November, succeeding Martin C. Madsen who died September 4. As chief engineer, Mr. Francis will be in charge of field, compressor and pipeline engineering on Northern's 8,000 mile pipeline system.

Byron E. Francis

Mr. Francis, who joined Northern in 1939, was appointed assistant to Vice President Innis in 1942. Following his discharge from the Navy in 1946 he returned to Northern as assistant to Mr. Innis. From August of 1952 to June of 1953 he was in Washington, D. C. on a leave of absence serving as assistant to the director of gas facilities division of the Petroleum Administration for Defense.

OKLAHOMA NATURAL ELECTION

All members of the board of directors, Oklahoma Natural Gas Co., were reelected at the annual stockholders meeting in Wilmington, Del.

At the board meeting in New York, these company officers were elected: A. E. Bradshaw, chairman; Joseph Bowes, president; H. A. Eddins, executive vice president; F. W. Peters, vice president and secretary-treasurer; George Frederickson, vice president; P. K. Sticolber, vice president; P. K. Wallace, vice president; H. C. Webb, vice president; A. F. Holmes, Enid district vice president; P. V. Root, Muskogee district vice president; T. H. Sterling, Oklahoma City district vice president; C. H. Rich, Shawnee district vice president; and E. C. McAninch, Tulsa district vice president.

AMERICAN

Gas Fundamentals

OUTLINE

NATURAL GAS
- *Geology and the Gas Industry
- *Methods of Drilling for Gas or Oil
- *Natural Gas Reserves
- *Chemicals from Gas
- *Natural Gas Conservation
- *Underground Storage of Natural Gas

MANUFACTURED GASES
- *Processes for Manufacturing Gas
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LIQUEFIED PETROLEUM GASES
- *LP Gas and Its Use in Utility Service

BASIC GAS LAWS
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American Gas Fundamentals *is a comprehensive compilation of basic gas facts to guide gas utility employees toward broader understanding of the industry.*

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Regulating Gas Pressure—continued

THE functions of a gas pressure regulator, its essential parts, performance characteristics, formulas, and some suggestion of more complicated regulator systems have been discussed in the two preceding chapters.

Regulators have such an important place in the operations of the gas industry that they, as a subject, will be continued here in greater detail, with the thought that a sound understanding of them will be broadly useful.

The operation of regulators, whatever the type, has the same basic objective. By way of review, that objective was given at the opening of these 3 chapters, generally, as the maintenance of a constant predetermined outlet pressure under conditions of variable flow rates and inlet pressures. That is the objective on a transmission pipeline, with pressures in excess of 1,000 psi or in a residence where pressure is measured in inches of water column.

A study of a sectional drawing of a regulator, at this point, for the purpose of understanding the parts and the gas flow will give a more detailed understanding of the operation. The drawing in Figure 19 is more detailed than those that have been presented in the earlier chapters. However, all parts labels have been omitted so that readers may study it and self-test ability to identify the parts and their functions. The earlier figures, with parts labelled, are convenient as the source of confirmation—or correction—of comprehension of Figure 19.

Note: Sequence of figure numbers in this chapter is continued from the two preceding chapters.

The regulator in Figure 19 is actually a simple regulator. This will be seen from the following description of the gas flow and the operation of the regulator parts.

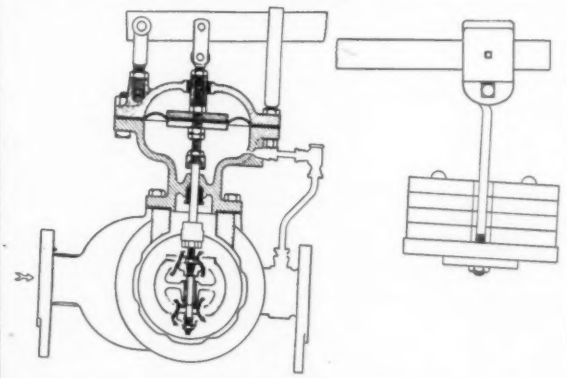

Figure 19. This is a simple type of regulator, using weights and leverage as the opposite-acting force. The drawing here is in more detail than has been shown in the 2 preceding chapters so that the reader can review his understanding of the parts and the operation from the accompanying text.

After entering the inlet in this regulator, gas flows up or down through the 2 valves. Any change of inlet pressure will exert force in opposite directions on the 2 valves. Inasmuch as the valve areas are equal, the effect of a pressure change cancels.

The 2 valves throttle the gas flow and cause a pressure drop between the inlet and the outlet of the regulator.

The static pressure at the outlet is connected to the underside of the diaphragm. A force that is exerted thereby tends to close the regulator valves. A downward force is exerted on the diaphragm, tending to open the regulator, by the weights acting through the leverage.

If the outlet pressure becomes too high, the pressure on the underside of the diaphragm rises, through the connection, and overcomes the force exerted by the weights. That starts a closing-action of the valves. As the valves close, there is a greater pressure loss for that particular rate of flow and that causes the outlet pressure to decrease to the point of the original setting. The setting, as is obvious in Figure 19, can be changed by adding or removing weights on the leverage.

For clarity, the reverse action will be traced.

If the outlet pressure drops below the setting, the pressure on the underside of the diaphragm will drop. The connection between the two points transmits the change. In this case, the force exerted by the weights will dominate, so the valves start an opening-action. As the valves open, the pressure loss for that rate of flow is decreased. That has the effect of increasing the outlet pressure to the point of the original setting.

Questions for self-testing

Questions seem appropriate, to aid in the completion of this self-testing of the operation of the simple regulator in the more detailed drawing, Figure 19:

1. Where is the inlet? The outlet?
2. Which part of the regulator drawing represents the valves?
3. Does gas flow up or down, through the valves? Or, does it flow both up and down?
4. Trace the line of gas, after it has passed through the valves, to the underside of the diaphragm?
5. Identify, surely, the diaphragm.
6. Is the action of the leverage clearly understood, from the weights, through the diaphragm, to the valves?
7. Is the function of the gas connection, from outlet to underside of diaphragm, understood in relation to the leverage action?
8. Will the addition of weights increase or decrease the outlet pressure?

It is felt that a ready-answer to each question, and a correct one, should be forthcoming. Interested readers can verify their own answers from the information and diagrams so far presented. The gas regulator is an in-

teresting and important mechanical device of the gas industry. Accordingly, a substantial understanding of it is urged.

Pilot control system detailed

For a more complete understanding of the pilot control system, than it was felt appropriate to present in the preceding chapter, Figure 20 is presented with complete parts labels. The circled letters have been included to facilitate reference to the diagram.

In this system, pressure in the main lower diaphragm is controlled by the action of weight-adjusted service regulator E. The use of regulator B is necessary, in practice but not theoretically, to limit the maximum pressure in the main diaphragm case.

Regulator B is set for approximately double the pressure that is desired at the final outlet. Regulator E is set for the actual final outlet pressure. The main regulator, D, is weighted for an outlet pressure that is approximately 50% higher than the desired final pressure.

Adjustments of the regulators is facilitated by the temporary installation and use of manometers between regulator B and the restricting needle valve, C, and on the main outlet line. The initial adjustments are made by closing needle valve C on the inlet side of regulator B and then weighting regulator E excessively so that it will remain open. With the main outlet valve open, the main inlet valve is opened slowly. Then, the regulator will be operating in the manner of a standard weight-type regulator. Weights are added to the main regulator to obtain an outlet pressure that is approximately 50% higher than the desired final pressure.

Then, needle valve C is to be opened slightly and the inlet valve to regulator B is opened. Using the manometer, the pressure from regulator B is adjusted to get double the desired final pressure.

The weights on the control regulator E are then to be decreased until the main outlet pressure is as required.

In operation, outlet pressure increases will cause control regulator E to close. The pressure from regulator B will build up the pressure in the lower diaphragm case of main regulator D and that will close the main valves to reduce the outlet pressure.

Similarly, decreased outlet pressure will open the control regulator E, which will draw gas away from the main diaphragm case at a rate that is faster than the restriction will permit it to be replaced, with the result that the valves in the main regulator will open to return the final outlet pressure to the desired point.

Power pilot control system detailed

For a more detailed understanding of a power pilot control system than was given in the preceding chapter, Figure 21 is presented with adequate parts labels. The circled number will facilitate reference from the operational description that follows.

The inlet side of the main regulator is tapped at 1 for a connection that bleeds a small volume of gas into the pilot regulator through a filter, 3. This gas flow is controlled by an orifice plug, 4. The gas flows to the pilot loading chamber, 5, through a channel, 6. This gas, referred to as pilot loading gas, then goes through a passage, 7, into the main loading chamber, 8.

The loading pressure gas is discharged into the outlet of the main regulator through a fixed orifice, 9, and the control chamber of the pilot regulator, 10. Then, it is piped, 11, into the main outlet line.

It must be borne in mind that only an extremely small volume of loading gas is flowing through the system just described, so it cannot affect pressure conditions in the control chamber or in the outlet control line.

Of course, it will be seen that the discharge of the loading pressure gas into the main outlet line will require a higher pressure in the loading chamber, 8, than in the main outlet line. That is a function of the spring under the main regulator diaphragm. This spring is loaded to overcome the weight of the moving parts and to assure a lock-up of the main balanced valve.

As the outlet pressure changes, due to variations in the use of the pressure-regulated gas, that outlet pressure acts on control diaphragm 13 in the pilot regulator with resulting action of the connected multiple set of large and flexible springs. For clarity, it is noted again that changes in the outlet pressure are transmitted to the diaphragm, 13, and the set of springs, through the loading pressure gas that is piped in 11, from control chamber 10 of the pilot regulator to the main outlet line.

Simultaneously with the reaction just described for the diaphragm and springs in the pilot regulator, the loading

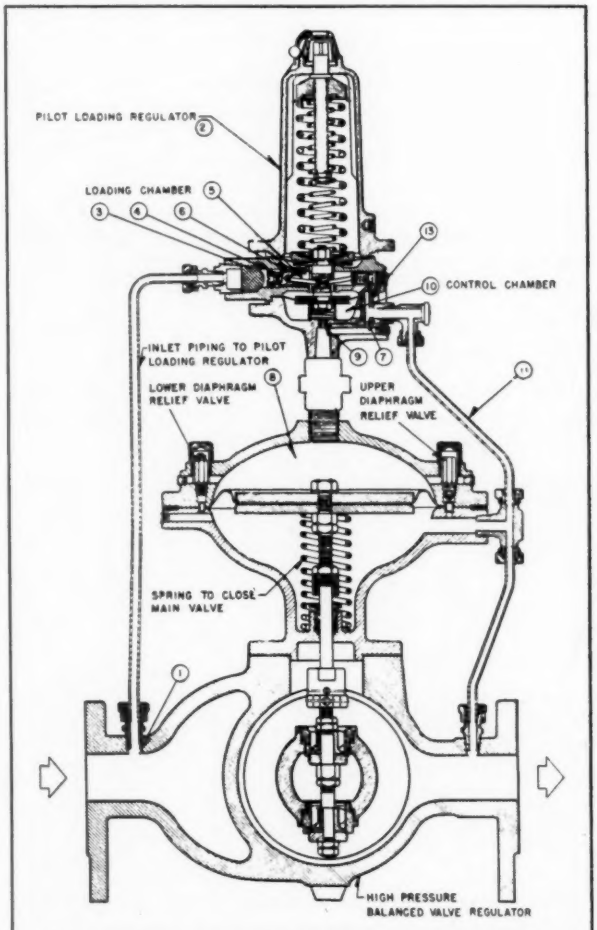

Figure 20. This pilot control system is diagrammed in more detail than given in Figure 16, so that all components can be visualized and their operations understood.

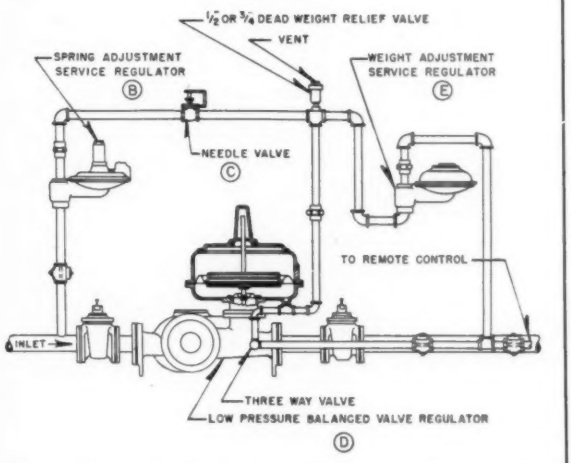

Figure 21. The details of this power pilot control system will, together with the more-detailed explanation, enlarge upon the simplified description and the diagram in Figure 17.

pressure gas acts against the underside of the main diaphragm. The tee in 11 injects the gas for that purpose.

Any change in outlet pressure, even though slight, is instantly transmitted to the pilot regulator which then raises or lowers the loading pressure, 8, over the main regulator diaphragm and positions the main regulator balanced valve. In that way the outlet pressure setting is maintained accurately.

In this system, an important point of flexibility is the practicability of positioning the outlet-pressure end of the control pipe at some remote point in the gas delivery main so that the operation of the power pilot control system will be based upon the pressure conditions at that remote point.

Instrument control system detailed

In an instrument control system of gas pressure regulation, any variation of the outlet pressure is transmitted to a measuring element in the controller. Action in this element is transmitted to a free vane controller unit where the free vane is positioned between two opposing nozzles.

This is shown in Figure 22.

The opposing nozzles are supplied constantly with air or gas at 17 psi, through a small orifice from the supply line.

In operation, as the van swings completely clear of a line from one nozzle to the other, the nozzle back-pressure falls to a minimum value. That value is determined by the ratio of air or gas through the orifice to the gas bled through the nozzles. When the vane is positioned between the nozzles, gas bled through them is restricted and permits back-pressure to rise to a maximum value.

The nozzle back-pressure is applied through tubing connections to the pilot valve capsule, shown in Figure 22.

When nozzle back-pressure is at a minimum, the capsule diaphragm drops, lowering the pilot valve ball to its lower seat and permits the 17 psi constant pressure to pass through the upper pilot valve seat into the loading gas line.

When nozzle back-pressure is at a maximum, the capsule diaphragm rises, lifting the ball valve into its upper seat and thereby shutting off the 17 psi constant pressure and allowing gas in the loading gas line to drop to zero pressure by escaping to atmosphere, past the pilot valve stem.

When the nozzle back-pressure is between minimum and maximum, the capsule diaphragm holds the ball between the upper and lower seats, thereby permitting the delivery of loading gas at pressures ranging from zero to 17 psi, depending upon the position of the ball. This varying loading pressure is applied to the main regulator diaphragm.

The power amplification that is made possible by the free vane and pilot valve permits great loading forces to be applied against the main regulator diaphragm.

For assured understanding of this system, this review with concurrent reference to Figure 22 seems appropriate.

An increase in outlet pressure will cause the *measuring element* to rotate the *free vane* in a clockwise direction from between the *nozzles*. That will decrease the nozzle back-pressure. The decrease in back-pressure is transmitted to the *capsule* through the connecting tubing and lowers the *ball valve* to its lower seat. That shuts off the *loading gas* bleed through the bottom of the pilot valve and permits constant pressure gas to flow through the pilot valve and into the loading gas tubing to the top of the diaphragm. The constant pressure gas acts on the diaphragm and causes the regulator valves to go into a closing action. When flow in the main line has been sufficiently restricted to bring outlet pressure to the pressure setting of the regulator, the measuring element will reposition the free vane between the two nozzles. That sets up sufficient back-pressure to raise the pilot ball valve and, as a result of that action, decreases the loading gas pressure on the diaphragm and, in turn, increases the main valve opening.

An instrument control system, such as the one just described, can be made to operate as a direct-acting or as a reverse-acting instrument.

In a direct-acting operation, the valves of the main regulator are normally open. This type of controller increases the loading pressure as the value of the outlet pressure increases.

In a reverse-acting operation, the valves of the main regulator are normally closed. This type of controller decreases the loading pressure as the value of the outlet pressure increases.

Adjustment of the controller, for direct- or reverse-acting operation is achieved by setting a sensitivity lever,

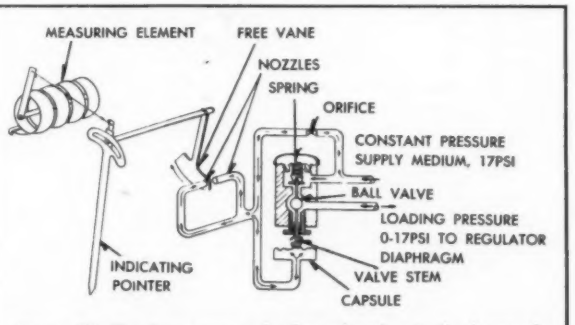

Figure 22. The free vane and pilot valve that is the heart of an instrument-controlled pressure regulator.

Physical Laws of Gases and Deviations from Them

Boyle's Law states that the volume of a gas is inversely proportional to the absolute pressure, and Charles' Law states that the volume of a gas is directly proportional to the absolute temperature. Mathematically stated, this is

$$\frac{PV}{T} = \text{constant}$$

If pressure increases or temperature decreases, the volume of gas will decrease and the constant will always be the same no matter what the fluctuation may be.

Consequently the formula may be written

$$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$$

where P_1, V_1 and T_1 are the pressure, volume and absolute temperature, respectively, for one set of conditions and P_2, V_2 and T_2 are the pressure, volume and absolute temperature, respectively, for another set of conditions.

Rearranged, the formula may be written

$$V_1 = V_2 \times \frac{P_2}{P_1} \times \frac{T_1}{T_2}$$

By substituting a metered volume of gas for V_2 and the absolute pressure and absolute temperature at which measurement was made for P_2 and T_2 respectively, and standard pressure and absolute temperature for P_1 and T_1 respectively, the volume of gas under standard conditions may be computed.

Note that absolute pressures and absolute temperatures must be used; absolute temperature is 459.6 + Fahrenheit degrees.

Tables of factors, readily available, will facilitate corrections for standard conditions without the direct use of the above formulas.

The laws given above hold for perfect gases and, for many purposes, the error in assuming that all gases are perfect is negligible. At high pressures, however, corrections need to be applied for the supercompressibility of the gases. The correction for natural gases, may be calculated with considerable accuracy by these formulas*

$$Y = 1 + \frac{P \times 3.444 \times 10^5 \times 10^{1.785} \times \text{SG}}{T^{3.825}}$$

for gases with specific gravities of 0.55 to 0.75, and

$$Y = 1 + \frac{P \times 9.16 \times 10^5 \times 10^{1.188} \times \text{SG}}{T^{3.825}}$$

for gases with specific gravities of 0.75 to 1.00.

In these formulas

Y = the supercompressibility factor
P = Pressure in lb. per sq. in. gage
SG = Specific gravity
T = Absolute temperature, 460 + °F.

The factor Y, when calculated, is multiplied by the volume of gas corrected by Boyle's and Charles' laws.

* California Gasoline Association, Bulletin TS-354.

depending upon the type of valve design and the type of control that is required.

Also, the degree of sensitivity is regulated by the sensitivity lever. At minimum sensitivity, the free vane will remain stationary, no matter how far the indicating pointer may move in either direction.

This regulator control instrument also provides a means of adjusting the throttling range. For clarity, the throttling range is the term applied to the range of values through which the outlet pressure must vary to cause the regulator valves to move from one extreme to the other.

It seems appropriate to include with this more-detailed discussion and description of gas regulators, a presentation of the physical laws of gases and deviations from them; see the boxed material that is part of this chapter.

At the opening of the first of these 3 chapters, the observation was made that any regulator has 3 essential parts: diaphragm, opposite-acting force and a variable restriction. From that point, the objective has been to show how those parts are applied, how they operate and how they are controlled. The gas pressure regulator has many variations and literally is used throughout the gas industry, from the wellhead to just before the customers' burners. There are few, if any, mechanisms that are used so widely in the industry and on which so much dependence is placed.

This chapter on Regulating Gas Pressure was prepared by Howard J. Evans, chief engineer and manager, gas products research and development department, Rockwell Manufacturing Company.

FEDERAL Power Commission

ORDER 174A REGULATING PRODUCERS MODIFIED BY 174B; DISSENT NOTED

The Commission made further modifications in order 174-A prescribing regulations governing independent natural gas producers and ruled that certain types of escalation clauses in contracts submitted after next May 1 will not be considered in support of any certificate application.

A major change in the new order 174-B is provision whereby operators selling gas in interstate commerce after processing or gathering may make necessary rate and certificate filings for participating producers, without separate filings.

This will apply (1) to operators of wells under coownership, (2) where group of producers is unitized for production and sale, or (3) to operator of gas processing plant located in area where gas is produced, when payments by operator to producers represent percentage of proceeds of gas sale by operator.

FPC still will be in control of price and sale before gas moves into interstate pipelines. Individual producers may make separate filings if they desire.

In another modification, the Commission revised statement barring service abandonment by producers without first obtaining FPC permission, by quoting Natural Gas Act pertaining to abandonment and by adding proviso that nothing in rules shall be construed as interefering with or preventing compliance by natural gas company with valid conservation orders of state agencies relating to natural gas production.

FPC noted number of petitions for rehearing of order 174-A urged Commission to redefine independent producers to make more precise the applicability of the statute and rules to those brought under Natural Gas Act by Supreme Court decision in Phillips case. FPC said it recognized desirability for clarification but said that problem is substantive and not procedural "and cannot be dealt with here." In this connection, the Commission pointed out hearings are scheduled and will be concluded at earliest practicable time to facilitate prompt determination of jurisdictional questions.

The portion of the order relating to escalation clauses resulted from another rule-making proceeding. This change provides that acceptance of gas purchase contracts in support of certificate filings shall not be construed as approval of rates, and that escalation clauses submitted after next May 1 will not be considered in support of any certificate application if they provide for adjustment of price of seller by reason of changes in prices received by purchaser upon resale, or if provision is made for adjustment of price of seller by reason of payment of higher prices by other purchasers in same or other producing areas.

Rate filings of small producers are materially simplified as to initial filings and rate increases. The new order also makes other revisions, mainly technical or clarifying. All changes are effective immediately.

Commissioner Digby filed dissenting opinion; Commissioners Nelson Lee Smith and Frederick Stueck filed joint concurring statement.

Commissioner Digby declared Commission should define jurisdiction over producers as part of order. He said "orderly regulation would be greatly advanced" by positive determination at this time. Without such decision, he said, hundreds of producers will file certificate applications and rates in transactions entirely outside FPC jurisdiction. He said that he would have Commission give broad but limiting definition of sales by independent producers, gatherers, and processors subject to regulation under Natural Gas Act.

Commissioners Smith and Stueck agreed with Commissioner Digby, it would be desirable for FPC to resolve prevailing uncertainties concerning jurisdiction under the Phillips decision, if possible. They were impressed by strong arguments made regarding the treatment of contracts in effect on June 7, 1954. They pointed out that "the Commission is by its action at this time in no manner or degree foreclosing further consideration, and in no way precluding future disposition, of these issues through the promulgation of interpretative rules of general application in appropriate proceedings, should the feasibility of such course subsequently appear to be greater than it now does." They expect that further clarifications and refinements "as we gain additional experience and understanding in these new fields of regulation."

TGT-Transcon Compromise Approved for $80-Million in NY-NJ Projects

Certificates have been issued to 4 pipeline companies authorizing construction of transmission facilities and development of underground storage areas in projects which will cost more than $80-millions.

The Commission also approved a settlement under which Tennessee Gas Transmission Co. and Transcontinental Gas Pipe Line Corp. will compromise competing proposals to serve 6 companies in New York-New Jersey area. Transcontinental now sells to all 6 and Tennessee originally had proposed to initiate competing service to 4.

The largest authorized project is Transcontinental's, $29,700,000. Tennessee will carry out one expansion project costing $28,700,000, and will participate in 2 underground storage programs with other companies, spending an additional $14,-647,221. These are joint projects by Tennessee and Iroquois Gas Corp. and by Tennessee and New York State Natural Gas Corp.

Transcontinental's project will include about 173 miles of 30" and 36" loop line plus approximately 58 miles of 12" and 16" line. These facilities, with additional compressor capacity, will enable Transcontinental to increase its system capacity by 37,275 Mcf per day, for New York-New Jersey customers.

Transcontinental had proposed a larger program. The Commission authorized only facilities included under the compromise, and reserved decision on all other portions of the proceeding.

Tennessee was authorized to build about 243 miles of 24" line from the Hebron storage field to existing facilities near Greenwich, Conn. Tennessee also will build about 18 miles of 24" line connecting the Hebron field with the Harrison storage field.

Tennessee will deliver to Brooklyn Union Gas Co., 20MMcf; Consolidated Edison, 25 MMcf; Long Island Lighting Co., 5 MMcf; and Public Service Elec. and Gas Co., N. J., 25 MMcf.

Transcontinental will serve these customers: Brooklyn Borough Gas Co., 1 MMcf.; Brooklyn Union, 5 MMcf.; Consolidated Edison, 5 MMcf; Kings County Lighting Co., 500 Mcf; and Public Service, 25 MMcf.

The compromise also provides for Transcontinental to transport for Tennessee up to 25 MMcf of firm gas and up to 30 MMcf of storage gas daily for delivery to Public Service. Tennessee will pay Transcontinental a transportation fee of $200,-000 per year.

In addition, FPC authorized Tennessee to sell additional gas to 4 of present customers: New York State Natural, 20 MMcf; Iroquois, 10 MMcf; Pennsylvania Gas Co., 5 MMcf; Inland Gas Corp., 3 MMcf; and Louisville Gas & Elec. Co., 1 MMcf.

FPC also allocated gas from Tennessee's system to interveners: Lake Shore Pipe Line Co., 12,596 Mcf; West Tennessee Public Utility District 5,754 Mcf; Luzerne Electric and Gas division, United Gas Improvement Co., 1,305 Mcf; and Pittston Gas Co., 1,325 Mcf.

Central Hudson Gas & Electric Corp. and Rockland Light & Power Co. also were seeking gas from Tennessee, but their supplier, Home Gas Co., intervened in opposition to their requests. The Commission reserved decision.

The Commission rejected Tennessee's proposal to transport natural gas for Equitable Gas Co. Tennessee was directed to sell additional 24,375 Mcf per day to Equitable.

Iroquois and Tennessee, in their joint project, will develop the Colden Storage Field in Erie county, N. Y., with an estimated capacity of 10 billion cubic feet of active gas. Tennessee will acquire from Iroquois an undivided one-half interest in the facilities. Estimated cost is $2,672,000 for Iroquois and $7,982,974 for Tennessee, including base storage gas.

The joint Tennessee-New York State Natural project will include the underground storage facilities in northern Pennsylvania and southern New York. The companies plan to develop a storage capacity of 19,680 MMcf in the Harrison pool. Tennessee was authorized to sell gas to New York State Natural for storage.

Curtailments by Panhandle Established

An interim decision has been filed by a presiding examiner setting up procedure to be followed by Panhandle Eastern Pipe Line Co. if it becomes necessary to curtail deliveries to customers in the Midwest during 1954-1955.

Turn to page 34—FPC

How Gas Company Executives Can Win Unavoidable Law Suits

by **Leo T. Parker**
Attorney at Law
Cincinnati

A MAJORITY of adverse verdicts in unavoidable suits result from negligence of officials and employees to acquire elementary knowledge of laws affecting gas companies. Here is a rather lengthy question from one official: "Some years ago our corporation took a franchise and made a contract with a city for establishment of gas rates. Now, certain new city officials are contesting the validity of these rates. Under what various circumstances would it be possible for these new city officials to invalidate these rates?"

The answer: Under the implied or expressed provisions of all state constitutions, a state may in the exercise of its police power change franchise of gas contract rates for the protection of the inalienable rights and general welfare of its citizens. Hence, although a contract exists in which gas rates are established, if such rates are unreasonable, or based on fraud, a state or city may alter or change such rates, or it may authorize a public service commission to do so. (See Munn v. Illinois, 94 U. S. 113, 24 L. Ed. 77; Milwaukee Company v. Com., 153 Wis. 592, 238 U. S. 174, 59 L. ed. 1754.)

On the other hand, this general statement should not be confused with the established law relating to city ordinances or contracts which fix reasonable gas rates for a limited period of time. (See Southern Company v. Chariton, 255 U. S. 539.) City ordinances and contracts of this nature are valid. In the absence of fraud in establishing the rates, from a legal standpoint, where no contract or franchise is involved, the rates are presumed to be valid, reasonable, and just until declared otherwise by a court of competent jurisdiction. In order to overcome this presumption the burden of proof that the rates are unreasonable or based on fraud rests upon the complaining party. (See 292 U. S. 290.)

This means, of course, that a citizen, or other interested person or corporation filing suit to invalidate gas rates established by a public service commission will not receive a favorable verdict, unless it is proved conclusively that the rates are illegal or unreasonable, or based upon fraud.

In State v. Lone Star Gas Company, 86 S. W. (2d) 484, the testimony showed that the Public Service Commission, after careful consideration, established reasonable gas rates. The court said, ". . . Rate making has been delegated to the Commission alone, and its acts in that regard have the force and effect of statutes."

For comparison, see United Gas v. State, 89 S. W. (2d) 1094. The testimony in this case showed that a city granted to a gas company a 25-year franchise with authority for this period of time to maintain and operate a gas distribution system in the city. Twenty-three years later the city, acting under what was believed to be the authority of a state law, passed a new ordinance and lowered the gas rates.

After due consideration, the Public Service Commission promulgated an order increasing the gas rates considerably over the rates specified in the city ordinances. However, the gas company was not satisfied with the rates established by the Commission and immediately filed suit to restrain the city from enforcing the new rates, contending that the rates were "unreasonable." However, since the gas company did not prove that the new rates actually were unreasonable, the higher court upheld the new and final rates established by the Commission, saying, "Rate making is essentially a legislative function. Rates fixed by the Commission have the same force and effect of statutes, and are subject to court review to the extent only as statutes of the same import are so subject, . . . The rate fixed by the Commission is presumed to be valid, reasonable, and just until declared otherwise by a court of competent jurisdiction."

Validity of signature

Another reader asks, "It seems that in my experience, many legal controversies especially in sale of gas appliances arise from improper signatures. Please give me the law as to what are the requirements of a signature to make a contract valid."

In the leading case of Mayers v. McRimmon, 53 S. E. 447, the law was considered relative to the validity of a contract where an employee attempts to bind his employer by imprinting the employer's name on a letter or contract with a rubber-stamp.

This court held the contract valid and explained the generally established law on the subject: "There the name had been so placed by one having authority to do it and with intent to endorse the instrument, the authorities hold that this is a valid endorsement."

In still another leading case, Carrol v. Mitchell Company, 128 S. W. 446, an authorized employee used a rubber-stamp to affix his employer's signature to a contract. Later the employer attempted to avoid responsibility on the grounds that the employer was not legally bound by a rubber-stamp signature.

However, the court held the employer liable and explained that since it was proved that the employee was authorized to bind his employer on contracts of this nature, and further that when the employee affixed the rubber-stamp signature he intended to bind his employer, the rubber-stamp signature was equally as effective as one pen-written.

Also, the same law is effective where a manager or other authorized employee affixes a signature with a typewriter, intending to make a valid contract for his employer. See White, 195 Pac. 316.

Therefore, it is immaterial how an employer, or his authorized employee, signs a contract or other instrument providing the employer was intended to be bound by the agreement when the signature was affixed.

For instance, in the case of Meaton v. Meyers, 33 Ill. 424, it was disclosed that an official signed a contract "H. C. M." Later litigation developed, and the higher court was presented the question whether or not the contract was valid. After carefully considering all details of the controversy the court held the signer's employer liable and explained that any person or employee may bind himself or his employer to a legal obligation by affixing any form of abbreviated signature or mark if the signature is affixed with intentions to bind the principal.

Furthermore, a gas company usually is liable where the testimony shows that officials authorize an employee to use a mechanical signing-device, although the employee exceeds his authority. This is particularly true if the other party to the contract knows that the employee has general authority to sign contracts for the gas company.

Not obligated to purchase system

"Does the ordinary franchise to a gas company from a municipality imply that the municipality will never do any act by which the value of the franchise grant may in the future be reduced?"

The answer is no, because such an implication would be altogether too far-reaching. Moreover, the powers of a municipality, even in matters not immediately connected with franchises, are not usually left to implication.

For illustration, in Skan, 184 U. S. 354, the legal question was presented the Supreme Court of the United States whether, without an exclusive contract and after expiration of the franchise, a municipality is impliedly obligated to purchase the gas system now being used by the holder of a franchise.

It is important to note that in this case the Supreme Court of the United States held that although the municipal officials may install its own gas system which seriously impaired the value of the gas company's property, the municipality was not obligated to pay the gas company any money, or otherwise be financially interested in how the gas company should salvage its investment.

For comparison, see the leading case of Joplin v. Southwest Missouri Company, 191 U. S. 150. In this case it was shown that a city ordinance was passed which granted a gas company the right to install and operate a "gas plant, necessary accessories, and to supply the inhabitants with gas" for a specified period of years.

In subsequent litigation the higher court construed this franchise to be exclusive for a reasonable period of time, "sufficient in duration" to justify and net the gas company a profit from its investment.

This court explained that litigations of this kind may be entirely eliminated if the

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AMERICAN Gas Journal FEATURE

Gas Industry NEWS

NEW COLUMBIA GAS SERVICE CORP. BUILDING NEAR COLUMBUS TO HOUSE COORDINATED DEPARTMENTS FOR ENTIRE SYSTEM

The Columbia Gas System Service Corp. will build a 2-story, air-conditioned office building in the village of Marble Cliff, a suburb of Columbus, O. The new structure will cost approximately $1-million, said Robert B. Milne, vice president in charge of buildings and real estate for the corporation and its parent, The Columbia Gas System, Inc.

Columbia has purchased 15 acres along the Scioto River for the new building.

In addition to an ultimate 225-person capacity, the building will house Columbia's McIlroy pipeline network analyzer, a complex electronic machine, used by the entire system for fast, accurate solutions to difficult gas distribution problems.

The new building will house a staff of engineers, systems and methods department, stationery department, purchasing department, and eventually a new electronic accounting department which will serve the entire Columbia Gas System.

The firm of Benham, Richards and Armstrong, Columbus architects, has been retained to draw plans for the structure, Mr. Milne said. It is expected to be completed and ready for occupancy by Fall, 1956.

CENSUS OF BUSINESS MERITS FULL COOPERATION

In 1955, the United States Census Bureau will carry out the vast and important job of getting an up-to-date picture of the American economy. Two million firms in manufacturing, mining and trade will report to the Bureau on their 1954 operations.

Three separate censuses will be taken: Census of Manufacturers; Census of Mineral Industries; Census of Business (wholesale, retail, and service trades).

The most recent census of retail, wholesale and service trades covered 1948 operations; the last Census of Manufactures, 1947; the last Census of Mineral Industries, 1939.

So many changes have occurred in the dynamic American economy in recent years that existing information is hopelessly out of date.

The Census Bureau has installed new electronic equipment which will speed up compilation of the new censuses.

These censuses make up one of the most helpful services which government performs for businessmen. The new census facts will be used in making decisions on plant location, product development, marketing channels, sales quotas, advertising campaigns, and many other matters.

Trade associations, chambers of commerce, and other groups also will use this up-to-date, detailed information. The censuses will be of vital use to the government in mobilization planning and many other programs as well.

The quality of the census depends on the reporting businesses. A census can be no better than its raw data. If the questionnaires have been carelessly or inaccurately completed, the value of the entire census may be jeopardized.

Reports will be kept strictly confidential. They will be classified, tabulated, and finally published in such form that the operations of *no single firm* will be revealed.

Only the Bureau's sworn employees will see the reports. They are by law subject to severe penalties for disclosure.

Promptness in completing and returning forms will reduce cost of taking the census.

Delay involves expensive follow-up. Rounding up facts from last 10% of reporting firms costs as much as getting them from first 50%.

Inaccuracy, where apparent to Census Bureau, also involves expensive follow-up and rechecking.

The Censuses are required by a law, enacted by Congress under strong urging by business.

The GAS JOURNAL urges complete cooperation with the Census Bureau. When forms and schedules are received, please make complete and accurate reports—and return them promptly.

Then—the new censuses will be of real and timely value to all.

NEW ECLIPSE PLANT IN CANADA OPENS

Completion of the new 10,000 sq. ft. plant for its Canadian subsidiary, Eclipse Fuel Engineering Co. of Canada, Ltd., Toronto, Ontario, has been announced by Eclipse officials in Rockford, Ill. The Canadian plant will be under the direction of Bert H. McGill, newly appointed president and general manager of the subsidiary.

AT&T ANSWERS AGA OPPOSITION TO LEASED RADIO EQUIPMENT

The recent resolution of the communications committee, American Gas Association, opposing leases of radio equipment and maintenance service contracts from common carrier companies has been answered by American Telephone and Telegraph Company in a statement that emphasizes "such assistance . . . does not, in any way, jeopardize the allocation of frequencies for private system users."

The AGA resolution stated that the equipment is operated under Federal Communications Commission licenses granted to the gas companies for the radio frequencies in the range known as Petroleum and Power Radio Service, and that the common carriers are engaged in an effort to make inroads in that frequency-range, allocated to private users.

AT&T's complete answering statement is given here.

The Federal Communications Commission has allocated frequencies for two broad types of mobile radiotelephone facilities—common carrier systems to serve the general public and systems for the private use of individual licensees.

The Bell Companies, in providing common carrier radio services, have organized engineering, installation and maintenance facilities and skills to fulfill their responsibilities in this field. It is natural that private radio system licensees should want to benefit from these resources and in the public interest that they be able to do so if they wish.

The provision of such assistance by the Bell Companies does not, in any way, jeopardize the allocation of frequencies for private system users. On the contrary, the availability of leased radio facilities and maintenance encourages eligible users to employ their allocated frequencies. Many users might otherwise be deterred by problems of capital outlay, obsolescence and complex maintenance. Clearly, if these problems are minimized by leasing from common carriers, the wider use of frequencies by eligible licensees is thereby made possible. Such wider use, in fact, strengthens the present allocation of frequencies to private licensees, rather than weakening it as has been claimed by some.

Where Bell Companies provide equipment and maintenance for private mobile systems to eligible licensees, the licensee has full control and responsibility for his system. This is just as true whether he leases the system from the telephone company or owns it himself and is further assured by contractual arrangements between the licensee and the supplier.

The Bell Companies' willingness to provide private systems gives eligible users a choice between ownership or leasing—an opportunity to make the right business decision in any situation.

BAILEY OFFICES IN DALLAS, MEMPHIS

Bailey Meter Co. has established new district offices in Dallas and Memphis. F. D. Krusemark is manager of the Dallas office, 6331 Aberdeen Ave.; R. E. Byers is manager of the Memphis office, 3256 Hendricks Ave.

CONSTRUCTION AWARDS IN 1954 POINT TO HIGH 1955 ACTIVITY

An unprecedented burst of strength in construction activity in the weeks ahead became virtually certain when F. W. Dodge Corp., construction news and marketing specialists, stated that a tremendously high December total of contract awards in the 37 states east of the Rockies brought 1954 awards to a record-breaking high of $19,770,207,000, up 13% from the previous record set in 1953.

December awards ran 41% ahead of December 1953. The total of $1,828,837,000 was not only far higher than any previous December in Dodge's 64-year record, but was one of the highest monthly totals ever recorded in spite of the fact that winter is traditionally a slack period for contract awards.

"The high December total will be hailed as the first solid assurance to confirm the optimistic views that have been expressed as to business in 1955," commented Thomas S. Holden, Dodge vice chairman. "It gives the American business community much the same kind of lift that came when we discovered that our totals for January 1954 seemed to forecast a big year.

"The big news is the December total. The fact that the year showed a sizable gain over 1953 was known a month ago when we found that the all-time high record for any year had already been set by the 11-month figure."

All three basic Dodge categories showed gains over the previous month and over December 1953. The residential classification was the headliner both for the month and for the year.

For December the totals were: non-residential, $701,427,000, up 43% over November and 30% over December 1953; residential, $761,577,000, up 7% over November and up 76% over December; public works and utilities, $365,833,000, up 22% over November and up 13% over December 1953. The grand total of $1,828,837,000 was up 22% over November and 41% over December 1953.

For the year 1954 the totals were: non-residential, up 2% over 1953; residential, up 31%; public works and utilities, up 3%. The grand total was up 13 percent.

Dodge Reports showed a gain each month except April, over the total for the same month of 1953. In April it was down only 3%.

LOUISIANA GAS SERVICE CORP. IS FORMED AS LP&L SUBSIDIARY

Louisiana Power & Light Co. has formed a subsidiary and, subject to the necessary regulatory approvals, will transfer to it all gas and water properties. The new company, Louisiana Gas Service Corp., is the outgrowth of a Securities and Exchange Commission order calling for disposal of non-electric properties.

After approval, all LP&L non-electric properties will be transferred in exchange for cash and capital stock of the Louisiana Gas Service Corporation. The new company will be staffed by LP&L personnel. Officers are: W. O. Turner, president; G. C. Rawls, vice president; A. E. Elliott, secretary-treasurer; A. B. Paterson, vice president, operations; C. J. Puckett, assistant secretary-assistant treasurer and A. W. Durning, chief engineer.

CALIFORNIA COMPANIES PROPOSE COMMUNICATIONS SYSTEM SALE

Southern Counties and Southern California Gas Companies propose to sell their radio communications system to Pacific Telephone and Telegraph Co.

Combined proceedings have been held before the California Public Utilities Commission. Under terms of the proposed sale the gas companies would lease the equipment and equivalent services from the telephone company. The gas companies would retain their licenses, and continue responsibility for operation as provided by Federal Communications Commission.

ELECTRO RUST-PROOFING OPENS NEW OFFICE IN ATLANTA

Electro Rust-Proofing Corp., cathodic protection engineers, has recently opened a new division office at 3 Rhodes Center, N. W., Atlanta, Ga., under the supervision of R. B. Mills, division manager and J. A. Lehmann, division engineer. The Atlanta office will serve North and South Carolina, Kentucky, Tennessee, Mississippi, Alabama, Georgia and Florida.

Mr. Lehman, in collaboration with Leon P. Sudrabin, wrote "Where to Place the Reference Electrode on a Pipeline" (GAS JOURNAL, August 1954, page 16).

PEACOCK CORP. DISTRIBUTES LP KIT

Peacock Corp., Westfield, N. J., has been granted exclusive Eastern distribution rights for a new LP gas carburetion conversion kit, by Borg-Warner Corporation, Marvel-Schebler Products division. The kit is used for converting fork-lift and other industrial trucks as well as light cars and road trucks. Mr. Peacock says that with industries and gas utilities maintaining LP bulk storage, the Borg-Warner kit provides for a low-priced automotive fuel that will lengthen the engine life. Oil life is said to be almost indefinite, and exhaust fumes are eliminated.

MEN at Work

WORTHINGTON CORP. REALIGNS TOP EXECUTIVE LEVEL IN 7 CHANGES

The board of directors of Worthington Corp. has announced the following changes in company management:

Hobart C. Ramsey, president, has become chairman of the board, succeeding Howard Bruce, who has been elected chairman of the executive committee. Edwin J. Schwanhausser, executive vice president and member of the board of directors, has become president, and Clarence E. Searle has retired as vice chairman of the board, but will continue as a director.

Walther H. Feldman has become executive vice president; Thomas J. Kehane has succeeded Mr. Feldman as vice president in charge of sales; Charles A. Butcher has been named vice president for planning; and William A. Meiter, central sales manager, has been promoted to general sales manager.

Mr. Ramsey, who joined Worthington in 1920, became president in 1949.

Mr. Bruce has been a director since 1921 and chairman of the board since 1929.

JACOBS-FOSTER-SHEA UPPED IN SOUTHERN CALIFORNIA GAS CO.

W. M. Jacobs, vice president, Southern California Gas Co., has been named vice president and assistant general manager of

W. M. Jacobs

F. M. Foster

the company. At the same time, F. M. Foster was elected a vice president, and P. R. Shea has succeeded Mr. Foster as general sales manager.

Mr. Jacobs, who joined the company in 1930, has held various supervisory and executive posts in the sales department, including that of general sales manager. He was elected a vice president in 1949, and was made a director in 1950.

Mr. Foster, in his new position, will take over the direction of the sales and customer functions, succeeding Mr. Jacobs. Mr. Foster joined the company in 1936, and in 1949 was made general sales manager.

Mr. Shea has been with Southern California Gas since 1946, and prior to this appointment served as general staff supervisor in the sales department.

EQUITABLE GAS PROMOTES 2 SUPTS

E. A. Humeston, Jr., has been appointed general superintendent of production and transportation, Equitable Gas Co., and Oak H. Shaw has been appointed superintendent of the Clarksburg div., succeeding Mr. Humeston.

In his new position, Mr. Humeston will be in charge of all production and transportation system activities in Pennsylvania and West Virginia. He began with Equitable in 1927.

Mr. Shaw joined the company in 1937 and prior to this appointment was assistant superintendent of division K, in West Virginia.

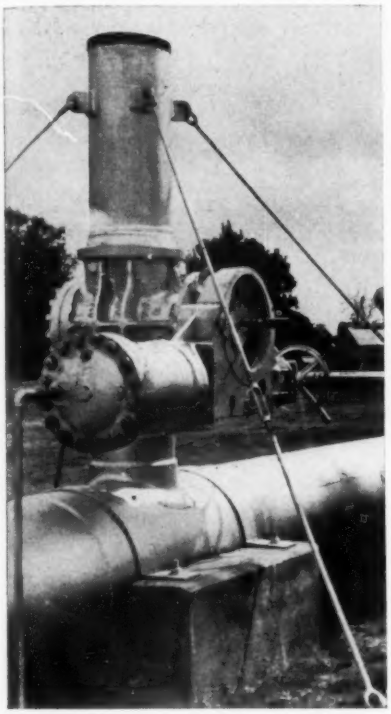
CHANCE HEADS UNITED ENGINEERS

Henry M. Chance, II, has been elected president of United Engineers & Constructors Inc. Mr. Chance has been associated with the company for the past 18 years. Starting as a design engineer, he later became an assistant construction manager. In 1946 he was named assistant to the president and in 1949 was elected vice president and a director. In this capacity he was responsible for the executive management of the engineering and construction functions of the corporation.

JET-ACTION OF BLOW-VALVES FACTOR IN BASE DESIGN

Unless foundations are properly designed, the jet-action of gas line blow-down valves can seriously damage a piping system, according to field reports by engineers of Rockwell Manufacturing Company's Meter and Valve division.

Action of the blow-down system may be compared to a jet plane's engine, the engineers point out. When the valve is opened, gas is released to atmosphere at the velocity of sound. The high-velocity jet action of the discharging gas results in a reaction in the blow-down system, causing it to move in a direction opposite to that of the gas.



In a recent investigation, Rockwell reports, the jet effect amounted to the equivalent of 16,000 hp—far greater than the power of any jet plane.

It is necessary to design and install foundations that can withstand the reactive force, to avoid severe damage to the blow-down system resulting from this phenomenon. The jet effect is most severe at the beginning of the blow-down period, as line pressure decreases to zero, so does the jet-effect. In designing the foundation, account should be taken of the maximum force exerted rather than taking an average figure for the force during the entire blow-down period.

The size of a blow-down branch usually is a fraction of the pipeline diameter, and is calculated to meet the desired blow-down time. The latter may vary anywhere from one-half hour to as long as one-half day; the shorter the blow-down, the greater the jet-action.

A well-designed foundation for a blow-down valve is shown in the accompanying illustration. Note the precast concrete base and steel bracings.

"Baby Digger" truck loads in close quarters, has big capacity, digs up to 20" wide, 5' deep

This East Ohio Gas Company job, the replacement of a main extension, shows why the Cleveland Model 92 "Baby Digger" is so widely used for city digging. The "92" puts the edge of a trench within 17 inches of a parallel wall, loads excess spoil directly into trucks at the curb, and affords the operator full visibility of the whole job.

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FPC

Continued from page 29

The decision is subject to review by the Commission.

The examiner found that Panhandle's delivery capacity was at least 969 MMcf per day when proceedings were concluded, August 6, while maximum estimated firm demand would reach 1,069.4 MMcf per day, assuming a concurrent peak of all Panhandle customers.

Panhandle received temporary authority last Septembr to construct, but not to operate, new pipeline facilities which will increase its capacity by 100 MMcf per day. The curtailment plan is to be effective as to main line only pending start of operation of these facilities.

The procedure requires that after full curtailment of all Panhandle direct industrial customers and of storage gas deliveries, Panhandle shall proportionately curtail deliveries to general service and limited service customers on uniform percentage basis up to 10% of all firm requirements. No general service customer is to be curtailed by more than 90% of requirements for large industrial customers. If further curtailment is necessary, it is to be by further proportional and percentage curtailment of deliveries to Panhandle's limited service customers.

The decision limits deliveries on Panhandle's Liberty, Missouri, lateral to volumes available to resale customers on the 1953-1954 peak day, when it becomes necessary to curtail any resale customer on that lateral.

The decision also requires Panhandle to establish a connection with facilities to be built by Northern Indiana Fuel and Light Co. upon commencement of operation of facilities temporarily authorized. Panhandle is to supply Northern Indiana with a maximum of 1 MMcf per day.

Panhandle had submitted an allocation plan which called for the discontinuance of service to 3 customers: Michigan Consolidated Gas Co., Gas Service Co., and Texas Gas Transmission Corp. Panhandle previously had filed applications to abandon service to these customers either in whole or in part. The presiding examiner declared that he could not under any circumstances adopt this procedure for the 1954-55 winter season. He said the bitterness with which these proceedings have been opposed by the 3 utility customers indicates that dilatory motions and appeals make extremely doubtful how soon after final order of the Commission, such abandonment could, even if allowed, become effective.

Panhandle Tariff is Denied

The Commission ruled that tariff sheets filed by Panhandle Eastern Pipe Line Co. providing for $12,128,000 annual wholesale rate increase, must be denied effect unless the company revises them to exclude certain items on which the higher rates were based in part.

This action was not deciding the merits of any element of the rate increase other than those excluded items.

The Commission's action was taken on motions filed by FPC staff counsel and Michigan Consolidated Gas Co. to dismiss the proceedings. The Public Service Commissions of Michigan and Indiana, the City of Detroit, the County of Wayne, Mich., and 19 of Panhandle's customer companies concurred in the motion in whole or in part.

The FPC order provides that tariff sheets as filed shall be without further force or effect until Panhandle files substitute sheets deleting proposed changes in rate structure and form of tariff, and containing rates no higher than those computed by eliminating the effect of "unsupported" changes in rate of return, from 5¾% to 6¾% working capital, and allocation, and deleting to proposed rate schedules purportedly for sales to utility customers for resale to industrial users.

Pipeline Companies' Revenues and Income at End of October

Operating revenues of pipeline companies totaled $130,655,347 in October 1954 and $1,563,028,221 for the 12-month period then ended, representing increases of 13.4% and 14.8% over revenues received in the like periods a year earlier.

Utility operating income for October amounted to $20,427,981 and for the 12-month period to $250,281,198, higher by 20.4% and 15.5% than earned in those periods a year ago.

Net utility plant of the companies aggregated $4,024,436,688 at the end of October 1954 compared to $3,704,587,801 at the end of October last year, an increase of 8.6%.

Net income for October 1954 was $13,798,467, up 19.4% from October 1953. For the 12 months ended October 1954, net of $165,704,918 represented an increase of 10.9% over the comparable period ended October 1953.

Gas sales to other gas utilities for resale, the principal business of these companies, for the month were 403,012 MMcf, 10.8% over October 1953. Sales to ultimate consumers during this month were 108,295 MMcf, an increase of 4.5% over October 1953. For the respective 12-months periods ended October 1954 and 1953 sales to other gas utilities for resale were 4,868,113 MMcf and 4,499,192 MMcf and to ultimate consumers 1,238,335 MMcf and 1,165,039 MMcf. Respective percentage increases were 8.2% in sales for resale and 6.3% in sales to ultimate consumers.

Operating expenses of the companies during the month of October 1954 totaled $84,095,998, up 14.6% over October, last year. The cost of purchased gas, the largest item of operating expenses, amounted to $65,609,872 an increase of 16.0% over the 1953 cost. Volume of gas purchased in October 1954 amounted to 510,580 MMcf, 9.4% higher than purchases made last October. On a 12-month basis, purchased gas for the period ended October 1954 cost $754,473,434, an increase of 16.6% over the comparable period in 1953.

Transmission expenses amounted to $11,045,703 during October 1954, an increase of 7.1% over last October. Transmission expenses for the 12 months ended October 1954 were $131,249,707, 13.1% higher than in 1953.

Okays Give Transcon Access to More Gas

Grants of 21 certificates were made in connection with a proposal by Trancontinental Gas Pipe Line Corp. to gain access to additional natural gas reserves in Chambers, Jefferson, Orange and Galveston counties, Tex.

Transcontinental will build facilities, estimated to cost $1,076,000, which will connect its pipeline system with a line to be built by Texas Gas Pipe Line Corp. FPC, at the same time, authorized Texas Gas Corp. to transport gas to Texas Pipe Line, and granted 18 certificates to independent producers authorizing them to sell natural gas to Texas Pipe Line or Texas Gas Corporation, or both.

TGT Gets $8-Million Rate Increase

The Commission issued an order making effective, as of December 15, a suspended $8,616,000 wholesale rate increase by Tennessee Gas Transmission Co., provided the company files a written agreement to refund amounts disallowed upon conclusion of the proceedings.

Tennessee serves approximately 70 wholesale customers in Connecticut, Kentucky, Louisiana, Massachusetts, Mississippi, New Hampshire, New York, Ohio, Pennsylvania, Rhode Island, Tennessee, and West Virginia.

Gas Cancellation to Northern Denied

The Commission rejected notice of cancellation by J. M. Huber Corp. of its schedules covering sales of gas produced in Carson and Hutchinson counties, Tex., to Northern Natural Gas Co.

The Commission consolidated this proceeding for hearing with a complaint by Northern against Huber, protesting proposed cancellation.

TGT Authorized Acquiring Tenn. Prod. Co.

An order has been issued authorizing Tennessee Gas Transmission Co. to acquire and operate the facilities of Tennessee Production Co., a subsidiary also of Houston. Tennessee Production is independent gas producer, with principal properties in the Gulf Coast and West Texas areas. It also owns interests in oil and gas properties in New Mexico, Oklahoma, Nebraska, Arkansas, Louisiana, Mississippi and Pennsylvania. Approximately 91% of gas produced by Tennessee Production is sold to Tennessee Transmission, which now owns 48.7% of subsidiary's outstanding common stock.

Phillips' Rates under New Probe

The Commission has reinstituted its investigation of the rates of Phillips Petroleum Company, for natural gas sold in interstate commerce.

Transcon Substitutes Higher Rate Filing

The Commission has permitted Transcontinental Gas Pipe Line Corp. to substitute a $4-million wholesale rate increase for a previously suspended $3,244,000 increase, and at the same time shortened the suspension period by 2 months, to February 1. Transcontinental filed revised tariff sheets proposing an additional $796,000 increase, based on additional rate increase filings by its suppliers.

AGA DIRECTORS HONOR CARL WOLF AT TESTIMONIAL DINNER

The Board of Directors of American Gas Association tendered a testimonial dinner, January 25, to H. Carl Wolf, who resigned recently as managing director because of illness. At the dinner F. M. Banks, president of AGA, said that it was "in a small measure a token of the esteem and appreciation for the great service beyond the appointed duties of his office which Carl Wolf has rendered to the entire gas industry.

H. Carl Wolf

"Because he gave so much of himself, the whole gas industry, as well as the American Gas Association made tremendous advances during the nine years of Mr. Wolf's leadership," Mr. Banks declared. "We are fortunate that we may still benefit from his experience and wisdom through having him as a consultant. We deeply regret that the necessity to preserve his own health prevents the Association and the industry from enjoying the full measure of leadership he has given us in the past."

Mr. Wolf was elected managing director of AGA in October 1945. Earlier, he was president of Atlanta Gas Light Co.; he had been president of Mobile Gas Service Corp. and Florida Public Utilities Co.

As its managing director Mr. Wolf played an important part in AGA developments and the notable expansion of its services to members and to the gas industry. He initiated meetings with regional and state associations. Also, he encouraged the adoption of intensive programs of public safety and accident prevention. He was largely responsible for the continued acceptance and expansion of the gas industry's PAR program.

Mr. Wolf initiated and directed an efficient program for streamlining functions of AGA. The by-laws and constitution of the association were revised under his direction to bring them in line with the present-day operations and activities. He took a major role in the formulation, presentation and adoption of the gas industry development program.

After receiving bachelor's, master's and professional degrees in electrical engineering from University of Illinois, Mr. Wolf entered the utilities field with Illinois Commerce Commission. Later he became manager of the Edwardsville, Ill., Water Co. He served as captain of engineers in World War I, and returned to civilian life as chief engineer for Public Service Commission of Maryland.

Later, he was assistant to the president, Central Public Service Corp., became vice-president of Consolidated Electric & Gas Co., and was elected president of Central Indiana Gas Co.

Mr. Wolf was a director of AGA from 1941 to 1945; in 1942 he was chairman of the national advertising committee; he also was chairman of the industrial and commercial gas section.

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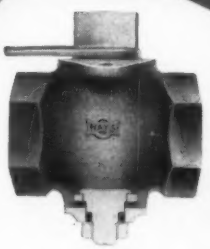

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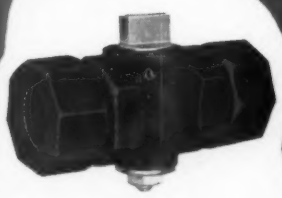

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PUBLIC RELATIONS

Continued from page 21

and approval on the part of management.

Say, I almost forgot to mention something that is proving a most valuable aid to better public relations, especially among new customers. We recently engaged a firm of operating consultants to analyze our procedure in handling new customer-connections, to determine how that operation could be speeded up. The firm suggested setting up a "short cut" operating force, with power to coordinate the several divisions of activity involved with new customer service, minus red tape and desk-tray delays. Applications for service now go through on a time-clock schedule, and the customer can be informed of the exact process of his application. And, most important of all, he can be told exactly when he'll get service.

Journal: Now, you're warming up to the subject and with a mighty practical flavor. Perhaps you can remember some past experience wherein a public relations problem was solved just because you had lived right with the people concerned.

Sherwin: As a matter of fact, I do recall a situation wherein the public was asked to cut down drastically on its use of gas, in order to avert a general shut-down of service, affecting several thousand customers. It was a test of public confidence, and proved that if you don't cry wolf too often you'll get results.

Journal: Just how did you prevail upon the public to do with a minimum of gas service, and what was the extent of natural gripes in the face of a situation we presume was beyond your control?

Sherwin: In southern California, cold-weather peaks occur after sundown and during the morning hours shortly before and after sunup. In the winter of 1949-50, intense cold weather continued during the off-peaks, and to such a degree that we could not recover our reserves. Only by radio, could we reach into the homes to warn of an emergency period and plead for a minimum use of gas. Newspaper interviews and advertisements explained the situation in detail, and urged customers to keep their radios turned on in event of another emergency when the supply of gas would be too low for safety.

Whether it was an element of self-preservation or a desire to help the other fellow probably will never be known, but a sufficient number of users did respond, and a 10% curtailment saved the day on several occasions. As to gripers, there were a few, but only about 50 expressed themselves in letters to the company or in letters to newspaper editors. Their chief argument was that the company should have foreseen the cold spell and provided greater reserves.

At the end of the emergency we sincerely thanked our customers for their fine response to the several appeals for help. The leaders in our communities knew the emergency was not of our making, but beyond our control. In their official positions they emphasized our appeals. This kind of assistance could only have been obtained through years of good relationship and understanding—years of knowing each other as fellow citizens, and working together on community problems.

A surprising aftermath of the situation was the fact that not one radio station would charge us for the considerable time used in broadcasting our appeals.

Journal: For a person who didn't want to write the book on public relations, it seems you've already written quite a few chapters. We'll bet you are alert on other practical applications of better living with your customers as well.

Sherwin: That statement gives me a pretty good hint that the interview is practically over.

You are quite right in your last statement. We do encourage the drivers of our easy-to-identify vehicles, in fact all drivers, to show the utmost in highway courtesy. We try to acknowledge from the top executive level the civic, religious, and fraternal work of our employees. We use the press, radio, and television in the explanation of new construction, new rates for service, and other matters pertaining to customer service.

Again, may I reach for a profound fundamental. Most customers are capable of understanding a simply-worded explanation, and will respond favorably to such informative treatment. It is the matters they don't understand that invite suspicion, followed by open resentment. A customer isn't always right, but he has the right to know why.

Journal: Thank you, Mr. Sherwin.

Works where an ordinary wrench won't!

This new REED wrench does everything a conventional pipe wrench will do, plus a great deal more. It gets into tight corners, close to baseboards or between parallel pipe lines and holds round, square or irregular shapes firmly, without "play" and without crushing. Its fast, ratchet action lets you turn either way from either side. You can tighten and "back-off" without taking the wrench from the pipe. 14", 18" and 24" lengths.

Ask your distributor or write for literature.

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for high efficiency gas purification at high pressures

Iron Sponge is your key to sulfur-free gas at minimum processing cost. Iron Sponge has high efficiency at low pressures or at today's high pressures and high temperatures. It absorbs *more* H_2S, gives long service between foulings, and is easily regenerated. Investigate it for your purification problem today!

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Elizabeth, N. J. • Los Angeles, California

WILLIAM H. HENSON

William H. Henson, special representative, refractory division, Norton Company, died December 1 in Worcester, Mass.

A graduate of University of Illinois, 1928, B.S., ceramic engineering, he joined Norton Company in 1928 as sales engineer. He became refractories engineer and, in 1944, was appointed chief sales engineer, refractories division. In 1947, he was named manager, sales engineering, refractories division.

W. PAUL JONES

W. Paul Jones, former president of Servel, Inc., died January 20 at the age of 53 in Evansville, Ind., after a heart attack.

Mr. Jones retired as president of Servel last September and became vice-chairman of the board. At the time of his death he was also president of Kellett Aircraft Corp., Camden, N. J.

Before joining Servel, in 1949, Mr. Jones was vice-president of the refrigeration division, Philco Corp. His first connection with Servel was in 1929; he left in 1934 to become vice-president of Fairbanks Morse Home Appl. Co. He joined Philco in 1939.

Mr. Jones was the holder of patents for refrigeration designs and developments.

MICHAEL P. NOLL

Michael P. Noll, a member of the sales organization of Servel, Inc., since 1933, died of a sudden heart attack at his home in Kansas City, Kans., Jan. 5.

Mr. Noll was district sales manager for Servel in the Kansas City area. Previously, he had been located in Boston, Lake Charles, La., Houston and Dallas.

JAMES LORIN RICHARDS

James Lorin Richards, chairman of the board, Boston Consolidated Gas Co., died at his home in Newtonville, Mass., Jan. 2, at the age of 96. He would have been 97 on Jan. 8.

Mr. Richards was born on a farm in East Longmeadow, Mass. He amassed a fortune in the tobacco business and had the desire to retire at the age of 42. At one time, he was a director of 33 companies, simultaneously. Until September, Mr. Richards was in his Boston office every business day.

WILLIAM W. VOSPER

William W. Vosper, founder of The Toledo Pipe Threading Machine Co., died December 17th, at the age of 79. Mr. Vosper was corporation secretary for several years and also was in charge of production and engineering. In 1938, he became president. During the last 10 years he was chairman.

R. E. KRUGER RETIRES FROM ROCHESTER

R. E. Kruger has retired from Rochester Gas and Electric Corp., after 38 years of continuous service, most of which was in the gas manufacturing division. He joined the company in 1916 as cadet engineer and advanced to general superintendent, gas manufacturing, in 1947.

TGT EXPANDS VICE PRESIDENT LEVEL IN 13 PROMOTIONS

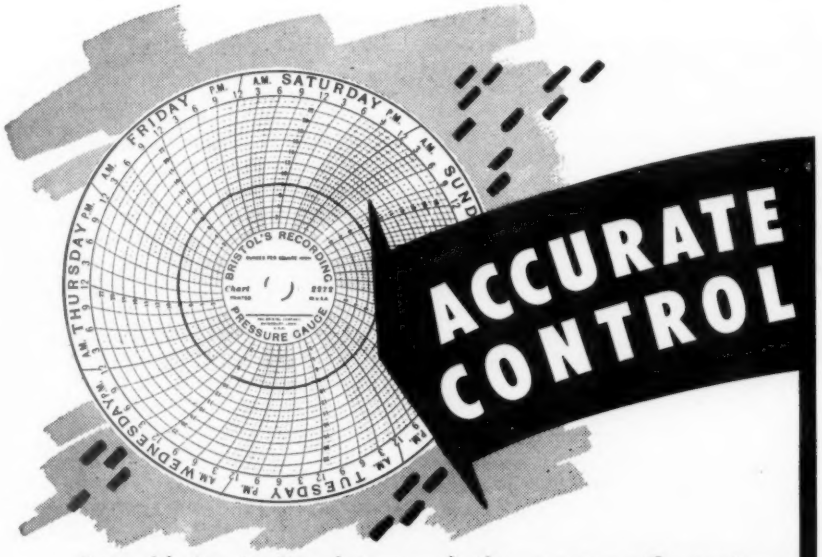
Promotions of 6 vice presidents to senior vice presidents and the election of seven new vice presidents to meet increasing administrative needs of Tennessee Gas Transmission Co. have been announced.

The newly-designated senior vice presidents are: Harold Burrow, N. W. Freeman, R. C. Graham, C. A. Lingo, W. C. McGee, Jr., and R. L. McVey. All are veteran executives of Tennessee Gas.

The new vice presidents are: Treasurer C. C. Johnson, Controller W. D. Walser, Sales Manager R. L. Jones, Gas Contracts Manager W. W. Witmer, Administrative Assistant Stone Wells, and S. C. Oliphant and R. R. Dean. The latter two have been vice presidents of Tennessee's producing affiliate. Designation of Administrative Assistant Charles S. Taylor as General Attorney also was announced.

PLANK NOW VP OF PEOPLES NATURAL

Richard J. Plank has been elected a vice president of The Peoples Natural Gas Co. Mr. Plank, who will retain his duties as general superintendent, began his term of service with Peoples as a civil engineer in 1936. He was made chief engineer in 1942, and superintendent of distribution in 1944. In 1953, he became general superintendent.



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MODEL 10

Dead Weight or Spring Type, with or without Mercury Seal, or Dead Weight Safety Seal or diaphragm operated relief valve. All working parts are so accessible as to be interchangeable without removal from pipe line.

MODEL 20

Dead Weight or Spring Type, with or without Mercury Seal, or Dead Weight Safety Seal or diaphragm operated relief valve. All working parts are so accurate as to permit complete interchangeability in shop.

MODEL 30

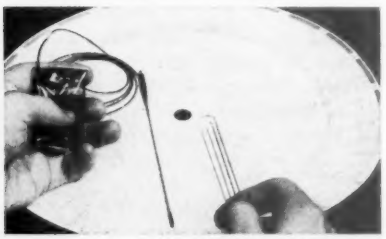
For horizontal or vertical connections, with or without removable valve pocket. Available with either Spring or Dead Weight adjustment. With or without Mercury or Dead Weight Safety Seal or diaphragm operated relief valve.

Reynolds Gas Regulator Co.
ANDERSON, INDIANA, U. S. A.
GAS CONTROL SINCE 1892

NEW Gas Industry Equipment

Instrument Recording Pen—Bailey

A new instrument recording pen for data interpretation, this featherweight, stainless steel capillary pen is fed from a clear, her-

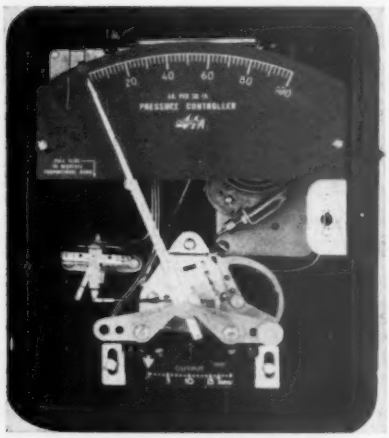


metically-sealed, plastic ink sac containing over a year's supply. Capillary action maintains continuous flow to a precision ground point which traces a sharp, opaque, quick-drying record. As many as four pens trace on parallel time arcs only .042 of an inch apart, which simplifies record interpretation and analysis. The sealed inking system prevents sludge and oxide formation, is contamination proof, non-corrosive, non-evaporating, and delivers an uninterrupted flow of fresh ink. Pens have run on equivalent 15-year accelerated tests at ambient temperatures from 20°F to 140°F without breakdown or appreciable wear.

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland 10.

Small Controller—Foxboro

An indicating controller for use on simple industrial processes, this unit replaces an earlier model and provides sharp on-off or



narrow band proportional control of such variables as temperature, pressure, liquid level and humidity. When equipped for on-off action, the new controller snaps the control valve from fully opened to fully closed when the measurement crosses the control point, handling any process with large capacity-demand ratio and negligible lag. For a process requiring throttling action, the model is equipped with a proportional unit adjustable from ¼ of 1% up to 25% of scale. The unit, a simplified blast feedback proportioning mechanism, relies on air jet rather than bellows actuated follow-up action. Left-to-right indicating scale with white-on-black numerals and graduations has been lengthened to 5". In conjunction with suitable control valves, the model is used in gas production, transmission and distribution for pressure reduction, and back pressure regulation.

Model 41A Pneumatic Controller. The Foxboro Co., Foxboro, Mass.

Portable Gas Sampler—Beckman

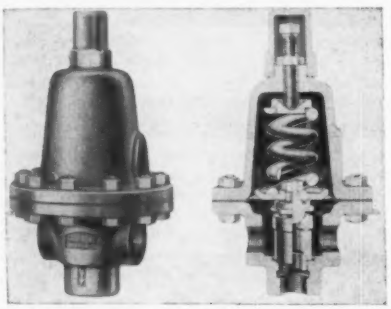
This new portable gas sampling unit provides a compact system for bringing sample gas streams to an analyzer for measurement. The unit measures 9⅜" wide, 6" high and 12⅝" deep, and weighs 15 lbs. It is particularly useful wherever it is desired to make quick determinations of the purity and/or contamination of gas samples. It consists of a motor-driven pump, filter, flow indicator, valves and a 20' power cord, all mounted in an aluminum case. The unit

may be attached to the company's oxygen analyzer or can be supplied with a handle for independent operation. In addition to other uses, the unit may be used to determine the oxygen content of gas which has been under less than atmospheric pressure during transmission or storage, to indicate whether contamination or explosive situations exist, or for evaluating heat content of LP gas when used where the gas is mixed with air.

Model Y-101. Arnold O. Beckman, Inc., 1020 Mission St., South Pasadena, Cal.

Relief Valve—Cash

This new series of back pressure relief valves is available in pipe sizes from ½" to 2" in iron, bronze, stainless steel or monel



bodies and is suitable for pressures up to 400 psi. The valve features a floating ring principle which, the company reports, substantially removes friction caused by drag of piston and cylinder, which results in better sensitivity, high capacity and good closure. The valves are fully adjustable, by means of an adjusting screw under the closing cap. Each unit has three connections; 2 side inlets and a bottom discharge.

FR Series. A.W. Cash Valve Mfg. Corp., 666 E. Wabash Ave., Decatur, Ill.

Solenoid Valve—Honeywell

A new solenoid valve which uses a spring-loaded synthetic valve and introduces other new features to assure more positive seal-off has been announced by the company. The valve, made of Buna N rubber, is so durable it should never need to be replaced and is soft enough to reduce the possibility of leakage caused by foreign particles which may lodge in the metal seat, the company said. Available models are in ¾", ½" standard and large, and ⅜" sizes. Other improvements include increased capacities, replaceable coils and use of a conical spring-loaded plunger which presses the valve disc snugly against the seat. Installation of the new valves is achieved through the use of a rotatable head which makes it unnecessary to loosen the body union nut to re-position the conduit spud for a desired alignment in making electrical connections. Only the cover nut needs to be loosened. A separate, easily replaced doughnut type coil is provided in the new valves.

Models VA835 (low voltage); *VA435* (line voltage); *VA84-VA44* (low and line voltage).

Minneapolis-Honeywell Regulator Co., Industrial Div., Philadelphia 44.

Mounted Ditcher—Barber-Greene

A new model ditcher has been added to the company's line, featuring a quick change of cutting width, operation from

cab or from standing position alongside of machine, and low vertical clearance. To provide mobility the company has employed, as a mount for the ditcher, the four wheel drive Dodge Power Wagon which offers a 45 mph road speed, and features such as enclosed operator's cab, lights, and regular truck steering. The model may be equipped with either of two digging booms. One has a 5' digging depth and the other 3'6". Through digging tooth design, either boom is adaptable to digging 8½, 12, 15 or 18 inches in width. The company's hydraulic drive mechanism is employed in the model. This transmission device utilizes a hydraulic pump and motor powered by the machine's engine. A single valve control regulates the machine's forward crowding speed, while digging. The operator has an infinite range of forward speeds from zero to 13 fpm.

Model 711. Barber-Greene Co., 400 No. Highland Ave., Aurora, Ill.

More NEW Gas Industry Equipment
See page 43

GEOPHYSICAL

Continued from page 14

Service, Inc., Dallas. These organizations specialize in research and development of equipment and methods in the gas and oil industry.

The seismograph process of charting the earth's subsurface is not new. The equipment recently used in Ohio is said to be more sensitive and exact in recordings. Although intricate, the apparatus is so compact it fits into the end of a station wagon.

The new equipment had never been used in the Appalachian area until the Ohio tests.

In a 25′ hole, dynamite is exploded. The resulting vibrations, rebounding from subsurface rock formations, are picked up by small receivers, planted about a foot underground and 175′ from the blast hole. Wires from the receivers carry the vibrations back to an amplifier in the station wagon. The amplified vibrations are recorded in wavy lines on film, which is printed and ready for interpretation within 3-to-4 minutes after the dynamite blast.

A geophysicist or geologist trained in the use of the new seismograph must interpret the wavy lines, but from a blast 25′ deep he gets an idea of what the structure of the earth is like as much as 7,500′ below him.

Blasts and readings are taken from a series of holes several hundred feet apart, to chart a given area.

While new ways are being established to find the rock formations favorable for natural gas and crude oil deposits, work goes on at storing out-of-state gas. The demand for gas is so great that Ohio Fuel is able to produce from Ohio wells only about 10% of its deliveries.

Much of Ohio Fuel's well drilling activity these days is in its rapidly expanding underground storage fields. These fields, which once contained native gas, now hold gas from the Southwest. When the demand is at peak, 60% of Ohio Fuel's requirements comes from underground storage.

Another development of recent years for increasing the production from new wells and for reviving the flow of gas from old wells which were once thought to be beyond further use is being utilized by Ohio Fuel. This development, known as formation-fracture, involves breaking the producing rocks with high pressures with subsequent production of gas or oil which would not have been recovered otherwise. Results have been highly gratifying, Mr. Ferguson indicated.

CONSUMERS POWER PLANS EXPANSION

Consumers Power Company plans to spend approximately $11.7-million in 1955 for the extension and improvement of natural gas facilities serving 280 Michigan communities.

DIGBY NAMED FPC VICE CHAIRMAN

Commissioner S. L. Digby has been elected by the Federal Power Commission as vice chairman for the calendar year 1955, succeeding Commissioner Claude L. Draper.

H. S. ROSE RETIRES FROM UNITED NATURAL AFTER 52 YEARS

H. S. Rose, president, United Natural Gas Company, since 1950 has announced he will retire on January 20.

He began his career in the natural gas business in 1903 as an employee of National Fuel Gas Co. In 1908, headquarters of United Natural, a National Fuel subsidiary, were moved to Oil City, Pa., and he was transferred as an accounting clerk. In 1916, he became chief clerk, in 1919, assistant treasurer. He was elected to the board in 1920 and secretary and treasurer in 1927. In 1950, he was elected president and a director of National Fuel Gas.

Successor to Mr. Rose will be elected at the annual meetings, January 20.

CAST IRON INSTITUTE MOVES

Sidney E. Linderman, executive vice chairman, Cast Iron Pressure Pipe Institute, is now located in new offices, 425 13th Street, N.W., Washington 4.

ASHVE VOTES CHANGE IN NAME

A vote of 4,081, the majority of 5,919 eligible voting members of The American Society of Heating and Ventilating Engineers, expressed approval of changing the name of the 60-year engineering society to American Society of Heating and Air-Conditioning Engineers, Inc. The Society will continue the traditions and services visualized by the founders of The American Society of Heating and Ventilating Engineers, in 1894.

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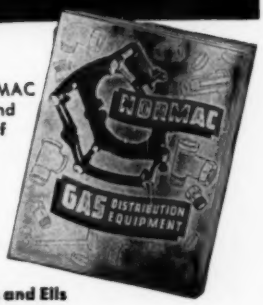

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PARKER

Continued from page 30

officials of a gas company, before taking a franchise and installing a gas system in a municipality, be certain that the franchise agreement and contract include all details as to future rights and obligations of both the municipality and the company.

What is "perpetuity"?

While on the subject of franchises, another relevant question has been asked: "When is a so-called perpetual franchise valid and enforceable by a gas company?"

According to a late higher court decision, in states where neither the constitution nor a state statute limits the duration of a franchise, its time or period may be unlimited.

For illustration, in State Missouri Public Service Corporation, 174 S. W. (2d) 871, it was shown that a city granted a non-exclusive franchise for furnishing gas to a corporation, not specifying a period of duration. After many years, suit was filed against the corporation to exclude it from all "rights, privileges and franchises" of furnishing gas within the city, and from "all rights, privileges and franchises of occupying the streets, avenues and alleys of the city with its poles, wires and other equipment." The higher court refused to render a verdict against the corporation, and said, "There being no limitation in the general law of the state, nor charter of the city, as to duration of franchises for public utilities in the streets, the grant of an easement for the purpose, not specifying a period of duration, is in perpetuity.'"

Also, see State McAllister v. Cupples Station, 223 S. W. 75, where a corporation acquired in 1896 a limited, nonexclusive franchise under a city ordinance. Seventeen years later it extended its service to several new areas that it had previously served. Four years thereafter legal proceedings were filed. The court said, "We do not think it a necessary conclusion that, because a franchise holder did not operate in all districts in which it was authorized to operate, it thereby lost all authority to operate in such unoccupied districts."

For variations of the modern law see State v. Development Company, 152 S. W. 67. There, an ordinance of a city authorized a nonexclusive franchise to any company which took certain well-defined steps accepting the terms in an ordinance. A corporation took such steps, and for a few years provided limited service to gas consumers. It then abandoned the enterprise, selling its contracts and equipment, and for 22 years it rendered no service whatever under its franchise. Then a new corporation was formed and this corporation took an assignment of former corporation's franchise, and filed certain applications for permits with the city.

In subsequent litigation, the higher court held that the city was entitled to forfeit the franchise, saying, "It must be held both on authority and reason that where the grant of a franchise is upon the implied condition that it shall be used for the public benefit, and there is a continued breach of the condition, whether because of misuser or nonuser, a cause for forfeiture exists."

Injuries in street

"What is the law as to a gas company's liability where a pedestrian is injured on a public street when the injury is caused primarily by defective installation or maintenance of a gas company's property?"

After reviewing all late and leading higher court decisions on this subject of law: All higher courts hold that a municipality holds the fee, or ownership, in its streets in trust for the actual property owner for the purpose of public travel, transportation, and other relevant purposes. Actually, the owners of real property abutting the street own the land to the center of the street. For this reason the courts require that both the municipality and the owners of property, on which a street abuts, shall exercise reasonable care to prevent injuries to pedestrians. However, since the city exercises control over the streets and sidewalks, the law expects the municipal officials and employees to use "reasonable" care to discover and remedy dangerous conditions and defects, on the streets and sidewalks.

Notwithstanding this general law neither a gas company nor a municipality is an "insurer" of the safety of persons or pedestrians who use the streets. However, the municipality must see that the streets and sidewalks are kept in reasonably safe condition for travel. This is a responsibility from which a municipality ordinarily cannot relieve itself by an attempt to place this duty on the owner of abutting property. Hence, the fact that a property owner, by agreement with the city, erects structures on a street or sidewalk does not exempt the city from its usual responsibility. See Wabash Company v. Defiance, 52 Ohio St. 262 and affirmed in Oden, 167 U. S. 68.

On the other hand, if an injury on a street or sidewalk results from negligence of an "independent contractor" the city may be relieved from responsibility. See the leading case of Todaro, 114 La. 253.

The facts of this case are that an employee of Southwestern Gas Company was seriously injured when a canopy owned by a city fell to the sidewalk in front of the building. The employee's suit for damages against the city was rejected by the lower court on the ground that an independent contractor was responsible. The higher court upheld this decision and explained that since the city was exercising no control or supervision over the manner and method by which the work was being done, it could not be liable.

This higher court went on to explain that an independent contractor is an employer who does work for a gas company under a contract, and the officials of the gas company have no right to direct the employees how or when to perform the work. In other words, if the gas company's officials have the right to control the contractor's employees as to how they do the work, or when they should begin or end a day's work, or otherwise exercise control over the employees, the independent contractor law is not applicable and the gas company is the legal employer responsible for negligence of the contractor's employees.

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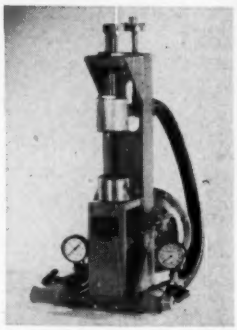
REPAIR and TEST STAND

U. S. Patent No. 2,565,086



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27 WINNERS IN ROCKWELL ESSAY AND JINGLE CONTEST

Twenty-seven winners in a nationwide essay-and-jingle contest on "planned meter retirement programs in the gas industry" have been announced by Rockwell Manufacturing Co.

The year-long contest, open to all persons employed in the gas industry, was sponsored by Rockwell to "stimulate thinking about gas meter repair practices," according to L. A. Dixon, Jr., vice-president, meter and valve division.

Winners will receive prizes ranging from individual Delta Homecraft power tools to complete shop equipment of Delta industrial-type power tools. These awards will

L. A. Dixon, Jr.

G. K. Bachmann

be presented at a series of luncheons this month in Rockwell regional headquarters cities: New York, Chicago, Los Angeles, Atlanta, Tulsa and Dallas.

George Bachmann gets big prize

First prize winner in the essay division was G. K. Bachmann, general superintendent of meters, Public Service Electric and Gas Co., N. J. Mr. Bachmann will receive an entire shop of Delta industrial-type power tools valued at $1,750.

Douglas L. McLeod, assistant gas engineer, Pacific Gas and Electric Co., won second prize, a complete shop of Delta Homecraft tools worth more than $1,100.

Four honor awards winners

Four honor awards, each consisting of a Deltashop 4-in-1 combination power tool with motor and accessories, total value of each is $386, went to:

Anton G. Prasil, gas staff engineer, Wisconsin Public Service Corp.;
J. M. Pickford, manager, gas engineering, Northern Indiana Public Service Corp.;
Donald J. Heim, staff engineer, Washington Gas Light Co.;
C. V. Morey, meter engineer, Consolidated Edison Co.

Eight honorable mentions

Eight honorable-mention winners of Delta 8″ tilting table saws are:

Adolph W. Rauth, general meter and laboratory supervisor, Consumers Power Co.;
C. Alkema, Jr., technical assistant, Michigan Consolidated Gas Co.;
S. H. Glassburn, meter repair supervisor, Northern Indiana Public Service;
Eugene J. Kuhns, accountant, United Gas Improvement Co.;
James H. J. Hughes, Jr., engineering assistant, development and planning department, Brooklyn Union Gas Co.;
J. Gordon Cree, manager of utilities, Boro of Chambersburg;
S. J. Fisher, petroleum engineer, Mountain Fuel Supply Co.;
W. F. Bennett, division engineer, Atlanta Gas Light Co.

Jingle contest winner

First prize winner in the jingle contest was H. H. Sexton, district superintendent, Houston Natural Gas Co., who will receive a completely equipped $386 Deltashop with motor and accessories.

D. U. Wheaton, special representative, Southern California Gas Co., won second prize, a Delta Homecraft saw and jointer combination and accessories worth $207.

Third prize, a Delta drill press and accessories worth $172, was won by Jack R. Davis, distribution design supervisor, Southern California Gas Co.

Ten honorable mentions

Ten honorable mention winners of Delta Homecraft scroll saws are:

Howard L. Johnson, office assistant, Pacific Gas & Electric Co.; Walter M. Trevor, superintendent's clerk, Pacific Gas & Electric Co.; Ed Read, meter repair, Pacific Gas & Electric Co.; Victor B. Gallant II, utility man, Southern Counties Gas Co.; Bill G. Lewis, utility clerk, Pacific Gas & Electric Co.; Henry Hartmann, assistant gas utilization engineer, Brooklyn Union Gas Co.; D. M. Steen, manager gas transmission and distribution, Long Island Lighting Co.; Charles H. Fowx, foreman, Central Hudson Gas & Electric Corp.; Roscoe R. White, foreman, Hope Natural Gas Co.; and Stuart Talbot, senior engineer, Peoples Gas Light and Coke Co.

The judges

Five American gas industry leaders served as judges for the contest: D. A. Hulcy, president, The Lone Star Gas Company, Dallas, Texas; F. A. Lydecker, vice-president of gas operations, Public Service Electric and Gas Company, Newark, N. J.; H. L. Masser, executive vice-president, Southern California Gas Company, Los Angeles, Calif.; William G. Rogers, president, The East Ohio Gas Company, Cleveland, Ohio; John West, acting managing director, American Gas Association, New York, N. Y.

IGT HOME COURSE TOPS 1,000

Enrollments in the Institute of Gas Technology home study course, "Natural Gas Production and Transmission," and sales of the reference text, passed the 1000-mark in December, less than 2 years after the course became available. The 1,000th copy of the text was sent to Wilbur R. Maxeiner, Oklahoma Natural Gas Co., Tulsa. A few days later the 150th "Certificate of Accomplishment" for completion of course was issued to B. C. Holman, Minneapolis Gas Co.

F. A. HOUGH JOINS BECHTEL CORP.

Frederic A. Hough has resigned as vice president and director of Southern Counties Gas Co., to join Bechtel Corp., construction and engineering concern.

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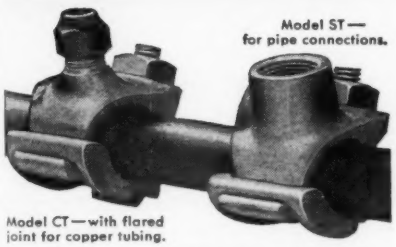

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Rotor-Brazing Equipment—Selas

A new rotor-brazing technique increases production rates at reduced operating costs. Accompanying illustration shows brazing

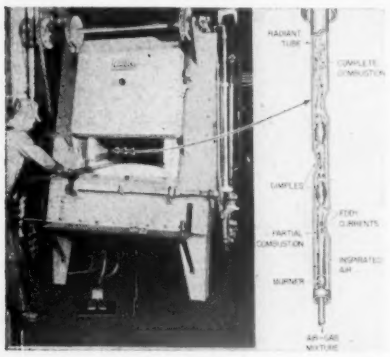
of 64 copper bars to the end ring of a rotor for an industrial electric motor in less than 5 minutes. Floor-to-floor time, including loading, heating cooling and unloading, is 15 minutes, compared with 1½ hours for conventional methods. The gas cost of the brazing operation is said to be 3½¢, compared with costs to $2.00 for oxygen-fuel torch brazing.

Work rotates within adjustable ring of 14 burners, each of which is in effect a jet furnace burning premixed air-gas. Products of combustion are released at high velocity through burner slots for localized heating with all copper bars brazed simultaneously. Brazing alloy can be preplaced which with the automatically-controlled heating cycle assures reproducibility of results.

Selas Corporation of America, Philadelphia 34.

Radiant Tube Furnace—Lindberg

Large-scale application of radiant tubes to toolroom-size furnaces has been announced for a gas-fired radiant tube atmos-



phere furnace that is said to be suited for heat treating virtually all production and tool steels, except high-speed, where scale- and decarburization-free work is essential.

The center stream, instead of being 100% gas, is a mixture of gas and relatively little air, insufficient for complete combustion. Indentations, approximately 1″ deep and on 6″ centers, are around the circumference of the tube, top-to-bottom. As the stratified gas-air mixture and the straight air surrounding it pass up the tube, the first dimple eddies the current which mixes air with some of the air-gas mixture, to accelerate combustion rate. As the streams move further upward, additional dimples continue the mixing until completed.

The radiant tubes are along the furnace chamber sides, eliminating the need for greater strength in horizontal tubes. The tubes are thin-walled Inconel, for maximum heat transfer through the tube wall, minimum internal tube temeperature for long life. Tubes are fired at lower ends and are removable through arch without cooling furnace or interrupting operations.

The shell is heavy steel plate reinforced with structural members, continuously welded. An automatic gas-air curtain fully covers the vestibule when the door is opened to exclude room air. The curtain ignites when the door opens; shuts off when the door closes.

Doors are vertical-lift, actuated by a foot operated valve.

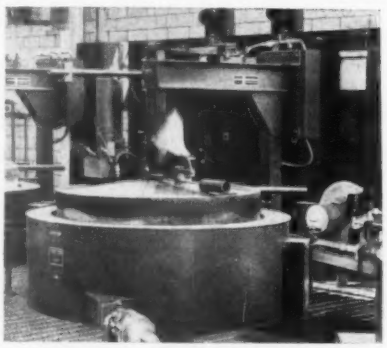
The cast-and-insulated door overlaps the vestibule on all four sides to provide metal-to-metal seal.

Maximum operating temperature to 1,850F. Factory Mutual-approved endothermic atmosphere generators available.

Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12.

Carb Furnace—Leeds & Northrup

As an extension of the Homocarb furnace line, a gas-fired model has been added and is made in 8 sizes, with work spaces



from 15″×18″ to 25″×48″. The furnaces are vertical batch type units. Burners, tangential to combustion chambers, vary in number depending on furnace size. Luminous-flame burners are used, with regulation by duration-adjusting type temperature control, to produce a long flame which wraps around furnace retort. The retort acts as a single radiant tube and is said to provide a uniform wall of heat around work chamber. Equipment includes safe-start burner control unit, with all gas and air valves, safety interlocks, blower and other accessories.

Microcarb control is provided for continuous, automatic regulation of the carbon content of the furnace atmosphere. Announced applications of the furnace include carburizing, carbon restoration, hardening, or homogeneous carburizing cycles.

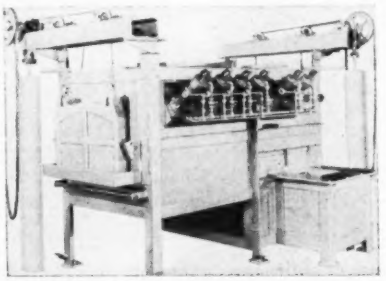
This part of the Homocarb equipment is said by manufacturer to be only carbon control which measures directly the carbon. Operation is based on detecting element, an electrical-resistance unit which reacts proportionally and swiftly to change in atmosphere carbon. Installed in work chamber, it measures gas at same operating temperature, flow rate and other conditions to which the charge is exposed.

The instruments which employ the detecting element are a controller and recorder. Both are conventional-type instruments, panel mounted with all measuring, signalling and control accessories. Controls will permit the equipment to start up only when all gas, air and power control components are in safe position. Failure of supply, or melting of temperature-limit fuse, automatically closes gas valve, which must be reset manually to resume operation.

Leeds & Northrup Co., 444 N. 16 St., Philadelphia 30.

Double Melting Furnace—Eclipse

A dry hearth double-chamber melting furnace has been developed for quality melting, die casting, or permanent molding



of aluminum parts requiring a minimum of porosity. Basic design consists of separate melting and holding baths in a single unit, thus eliminating use of containers. Furnace is said to have high melting rate and uniform pouring temperature.

Aluminum is charged through door into sloping melting area which allows aluminum to flow into holding compartment, where temperature is instrument-controlled. Cold metal cannot enter hot bath. Design eliminates gassing of metal. Burners are mounted so products of combustion contact metal without flame impingement; pilot is integral with main burner.

Eclipse Fuel Engineering Co., 1002 Buchanan Street, Rockford, Ill.

METTLER PURCHASED BY ECLIPSE

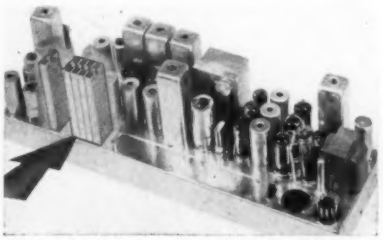
Assets of The Mettler Co., Inc., Los Angeles, have been acquired by Eclipse Fuel Engineering Co., Rockford, Ill. The company will continue to operate as The Mettler Co., Inc., division of Eclipse Fuel Engineering Co., with all manufacturing and sales to be handled in the West Coast offices and plant. R. W. Pixler, former manager of combination gas-oil burner sales of Eclipse, has been appointed vice president and general manager of the Mettler division. James M. Kobabe, former president of Mettler, will be associated with the company as a consultant.

More
NEW Industrial Processing Equipment
See page 43

NEW Communications Equipment

450 mc Mobile Receiver—Motorola

Greater RF selectivity and increased reliability are noted as features of an improved mobile radio receiver recently



placed in production. The new universal 6-12v. unit operates in the 450-470mc range.

Use of a multiple-tuned cavity preselector of compact design yields relatively steep skirted selectivity that maximizes protection against UHF TV interference. The low insertion loss, less than 2db, of this preselector combined with an extra-low-noise crystal diode mixer entirely eliminates the need for RF amplifier tubes. Servicing is said to be correspondingly simplified.

New high Q, low-loss cavities are also used in the band-pass filter of the companion transmitter to provide greater attenuation of harmonics, subharmonics.

Motorola Communications and Electronics, Inc., Tech. Inf., 4501 W. Augusta Blvd., Chicago 51.

Impulse-Duration Telemeter—Foxboro

An impulse-duration telemetering system which transmits and receives long-distance measurements of variables has been introduced. Designed for reliable transmission of gas line flow and pressure, the telemeter can handle distances up to 150 miles by wire or may be operated over radio link or microwave channels.

Because the system operates as a function of pulse duration, the signal level can vary widely without affecting operation or accuracy. At 12-second intervals, the telemeter transmitter sends a pulse to the receiver proportional in duration to the variable being measured. The receiver automatically compares the duration of this pulse to that of the previous one and actuates a reversible motor which positions a recorder pen or indicator pointer to reflect any measurement change.

The system uses relatively few moving parts, each of which is easily accessible and can be serviced without special tools. Plug-in receiver relays and mercury-type switches are used for safe, reliable service.

Foxboro Teletex Telemeter. Foxboro Co., Foxboro, Mass.

NEW Bulletin

MOTOROLA POWER UTILITY PRODUCTS

This bulletin explains the possibility of utilizing the upper portion of the voice frequency spectrum—2400-3100 cps.—to send control-data reporting signals over 5 channels, using FM techniques, without affecting the voice transmission. Or, if it is desired to utilize the entire voice frequency spectrum from 500-3100 cps., up to 18 channels can be obtained. The additional channels, the bulletin points out, can be used for telemetering, telegraph, teleprinting, load control, dialing and signaling, and for the transmission of alarms. Numerous photographs and drawings are presented to show how frequency-shift voice frequency carrier can be used in virtually any communications network where data can be translated into coded information.

Bulletin E-112. Pp. 12. Motorola Communications and Electronics, Inc., 4501 W. Augusta Blvd., Chicago 51.

NEW Gas Industry Equipment

Masonry Cutting Blade—Clipper

A new break-resistant abrasive blade for masonry cutting has been announced by the manufacturer. Both sides of the blade are symmetrically covered with raised abrasive "polkadots," each acting as an extra cutting edge. According to the company, extensive field and laboratory testing has demonstrated the efficiency of the polkadots in reducing side-friction and the resultant drag, allowing a maximum of power to be delivered to the cutting edge of the blade. Additional benefits are found in cooler, smoother running blades that cut faster with less wear. The blades are reinforced out to the cutting edge with glass fiber webbing, with extra reinforcing on both sides at the hub, where the strain is greatest.

Polk-A-Dot Blades. Clipper Manufacturing Co., 2800 Warwick, Kansas City 8, Mo.

Temperature Instrument—Burling

Designed for both laboratory and industrial use, this indicating temperature control combines an independent dial thermometer

with a differential expansion type temperature control. Several adjustable temperature ranges are offered, including 150-750°F. Control is obtained by the differential expansion of two concentric tubes actuating a snap-acting switch through a lever. Switch is rated at 15 amp. 125-250 volts, a.c. Operating differentials are from ± 1 to 4°F, depending on conditions. This control is for local mounting and may be furnished with flange or threaded fittings.

Model LD-1S. Burling Instrument Co., 16 River Rd., Chatham, N. J.

Gas Cleaner—Blaw-Knox

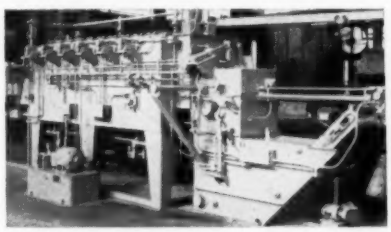
A new type of gas cleaner which is lower in height than a conventional scrubber and available in smaller capacity sizes, these cleaners are designed for district gas regulating and distribution points where height is a limiting factor. Sizes range from 8" to 30" nominal diameter. The maximum gas capacities at 30 psig operating pressure run from 7,000 up to 205,000 cfh, with more capacity at higher operating pressures. The new cleaners can be constructed for any pressure required. The new low-height gas cleaners have been designed for indoor or underground installations. No sacrifice has been made in scrubbing efficiency with the new design, since the same oil contacting principle is used to maximum advantage, according to the company. The mist extracting system is of entirely new design, fully tested, and of high efficiency. The entire cleaner is built for flexible operation as required at district regulators, where highly variable gas flows occur.

Blaw-Knox Co., Farmers Bank Building, Pittsburgh 30, Pa.

NEW Industrial Processing Equipment

Atmosphere Furnace—Lindberg

A new gas-fired vertical radiant tube hydraulic pusher production carbonitriding and gas carburizing furnace is designed to



handle production loads of small parts requiring neutral hardening, carbonitriding, heavy and medium case gas carburizing and carbon restoration.

In the cycle of operation, the furnace is brought to the desired temperature and the operator sets a cycle timer for pushing interval. When timer rings, a loaded basket is placed on the front loading table; a manual button starts the pushing sequence. All following operations are automatic.

At the end of the heating chamber, a cylinder slowly inverts the basket 180° allowing the work to trickle into the quench below, to obtain uniform hardness. A door then opens and another cylinder pushes the empty work basket to a gravity conveyor leading back to the charging end.

Heating is by means of 20 suspended radiant Inconel tubes, 10 per zone. All tubes are fired at the lower end; are readily removable from the top plate without cooling the furnace or interrupting operations. Total input rating is 1,630,000 Btu/hr; maximum temperature rating is 1,850 F. Hearth area of the furnace pictured is 18"w × 9'l. It holds 12 baskets, 18"w. × 9'l. × 5"d.

Lindberg Engineering Co., 2450 W. Hubbard St., Chicago 12.

Gas Industry CALENDAR

JANUARY

21 SGA employee relations round-table, Nashville, Tenn.
24 SGA air conditioning sales conference, Adolphus Hotel, Dallas.
24-26 AGA home service workshop, Drake Hotel, Chicago.
27-28 Southern California Meter Assoc., instrument short course, Los Angeles Harbor Junior College, Wilmington, Calif.
28 SGA accident prevention round-table, Heidelberg Hotel, Jackson, Miss.
28 SGA air conditioning sales conference, Heidelberg Hotel, Jackson, Miss.

FEBRUARY

4 SGA work-on-Consumers'-premises conference, Biltmore Hotel, Oklahoma City.
7-11 Western winter appliance market, Merchandise Mart, San Francisco.
11 NEGA manufacturer-distributor division, Hampshire House, Boston
23-24 PCGA seminar, electronic data processing, Los Angeles.

MARCH

2-3 PCGA home service conference, Santa Monica.
4 SGA transmission management conference, Shamrock Hotel, Houston.
7-9 Mid-West Gas Association, St. Paul Hotel, St. Paul, Minn.
9-10 PGCA customers service conference, Carmel, Calif.
17-18 SGA conferences, Jung Hotel, New Orleans:
accounting management
distribution management
sales executive
21-23 AGA general management section, spring conference, Netherland Plaza, Cincinnati.
23-24 PCGA accident prevention conference, Santa Barbara, Calif.
24-25 NEGA, annual meeting, Hotel Statler, Boston.
24-25 Oklahoma Utilities Association, convention, Mayo Hotel, Tulsa.
28-Apr. 1 Western metals exposition (PCGA exhibit), Los Angeles.

APRIL

5-7 Univ. of Oklahoma—NACE, corrosion control short course, Norman.
12-14 AGA sales conference, industrial and commercial gas, Hotel Statler, Boston.
12-15 AGA distribution, motor vehicles and corrosion conference, Netherland Plaza, Cincinnati.
14 GAMA 6th annual range conference, Hotel Pierre, New York.
18-19 AGA residential section, eastern natural gas sales conference, Hotel Wm. Penn, Pittsburgh.
19-20 PCGA distribution conference, Phoenix, Ariz.
19-21 Southwestern gas measurement short course, Univ. of Oklahoma, Norman.
25-27 Midwest sales conference, Edgewater Beach Hotel, Chicago.
25-27 Electric and gas utility accountants, national conference, Conrad Hilton Hotel, Chicago.
27-29 AGA research and utilization conference, Hotel Statler, Cleveland.

MAY

1-4 LPGA convention, Conrad Hilton Hotel, Chicago.
2-3 PCGA transmission conference, Palm Springs, Calif.
2-6 AGA industrial gas school, Hotel Wm. Penn, Pittsburgh.
9-10 AGA gas supply, transmission, storage conference, Hotel Wm. Penn, Pittsburgh.
9-13 National restaurant exposition (AGA exhibit), Navy Pier, Chicago.
12-13 PUAA, Sheraton Hotel, Chicago.
16-18 SGA 47th annual convention, New Orleans.
17-19 Pennsylvania Gas Association, Pocono Manor, Pa.
23-24 AGA residential section, N.Y.-N.J. sales conference, Hotel Commodore, New York.
23-25 AGA chemical, engineering, manufactured gas production conference, Hotel New Yorker, New York.

JUNE

5-9 Canadian Gas Association, annual meeting, Sheraton-Brock Hotel, Niagara Falls, Ont.
9-10 Natural Gas and Petroleum Association of Canada, Royal Connaught Hotel, Hamilton, Ont.
27-28 Michigan Gas Association, Mackinac Island, Mich.

JULY

18-Aug. 13 Southeastern Gas Association, short course in gas technology, Raleigh, N. C.
18-22 Western summer appliance market, Merchandise Mart. San Francisco.

AUGUST

15-Sept. 10 Southeastern Gas Association, short course in gas technology, Raleigh, N. C.

SEPTEMBER

7-9 Mid-West Gas Association, school and conference, Iowa State College, Ames.
9 New Jersey Gas Association, Hotel Monmouth, Spring Lake.

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